

THE BOSTON Medical and Surgical JOURNAL

VOLUME 192

JANUARY 15, 1925

NUMBER 3

ORIGINAL ARTICLES

EPILEPSY OR HYSTERIA

A Study of Convulsive Seizures and Unconscious States in One Hundred Ex-Service Men

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CONVULSIVE seizures and unconscious states have been medical problems from time immemorial and continue to be. They have been the cause of much heated controversy among neurologists, especially as to what their etiology might be. When we refer to convulsive seizures and unconscious states, we at once think of the terms epilepsy and hysteria. Spratling has defined epilepsy as "a disease or disorder of the brain, characterized by paroxysms which are abrupt in appearance, variable in duration but generally short, and in which there is impairment or loss of motor-coördination, with or without loss of consciousness."

Though epilepsy is one of the oldest diseases to which man is heir, we no longer attribute the cause of it to the benevolent interest of mythological deities, to vapors and humors arising in the body, or to the possession by devils. It was Hippocrates who contended against the popular belief of his day that it is a disease inflicted by the gods, and said that the only reason for attributing a divine origin to it was because its exact nature is incomprehensible. Even today, its exact nature is not quite understood. Yet, as in past ages, our galaxy of patient and persevering investigators of the present are making every research effort to illumine our pathway, in our search for the cause, or, better, causes of epilepsy.

As to defining hysteria, it has been said that not any absolutely comprehensive definition has as yet been made, though it is more or less agreed that it is as Janet has opined, "a contraction of the field of consciousness," which makes it impossible for the hysteric to admit a number of impressions into his consciousness, and to connect them with his own personality. Janet further thinks that "unconscious and sub-conscious imagination plays an essential part in the production of hysterical phenomena." Mobius has held that all the morbid changes of the body caused by imagination are hysterical. Oppenheim, in his book, has stated

"that the primary cause of hysteria is an abnormal condition of the mind, and the anomalies chiefly involve the sphere of emotions; also, that many hysterical symptoms are explained by the abnormal influence of emotion upon the motor, sensory, vasomotor, and secretory functions, by the 'disproportion' between the psychophysical symptoms or movements of expression which belong to them. Another noteworthy factor is that past mental experiences may have a morbidly exaggerated influence upon the mood of the present, and that the reproduction of memory pictures which have unpleasant associations may be facilitated."

On January 1, 1924, the number of patients or men under the U. S. Veterans' Bureau, District No. 1, who had epilepsy totalled 616. There were in addition 51 men who had epilepsy with psychosis, and 605 men who had hysteria. The 100 men whom I have studied are those on which a special epileptic board was held. As I was chairman of this board, I could not help becoming interested in the wealth of convulsive men who came before me, particularly after reading those two splendid papers on epilepsy by Osnato and Rosett, respectively. Because of lack of outside social histories, I have been unable, in my study, to trace in nearly every instance some preëxistent defect of the highest nerve functions, as did Hauptmann, who made a study of fifty-two patients in whom epilepsy seemed to make its appearance as a result of war exposure. I did find, however, with the incomplete information on hand, that said defect had been present in the vast majority. Frequently, cases which were labelled epilepsy were found, in the opinion of the Board, to be hysteria, or psychasthenia with convulsions, when a more detailed neuro-psychiatric examination was made. However, though the label was changed, the prognosis, as far as cure or economic efficiency was concerned, would correspond to the former label of epilepsy. A

prognosis of malignant or poor was given, which demonstrates that the epileptic or hysterical seizures were not absolute diseases in themselves, but were the predominant and outstanding signs of a disintegrated, dissociated, and disordered organism.

The following case is an exemplification of what I wish to convey:

Case 1. An ex-soldier, aged 38, had his first so-called epileptic fit at the age of fifteen, having at that time become excessively addicted to alcohol. His only collateral, a married sister, was very sickly and nervous, and was subject to trances and hysterical seizures. His father, who died of "slow consumption" at the age of seventy-three, was epileptic the last thirty years of his life. His mother, who has always been hyperemotive, has for the last three years been having what the patient has been told are epileptic convulsions. "When she goes into them she will be unconscious for two or three days at a time, then when she comes to, she is awfully sick. She lays there as if she were going to die any minute—like in a trance." She is very childish, and is now seventy-six years of age. The history of other relatives is indefinite.

He started school at six years of age, and left at fifteen in the third grade. He was a chronic truant, his deportment was poor, and he was supersensitive in school. The other pupils made fun of him. Their laughter embarrassed and discouraged him. Economically he was marginal and very changeable, repeatedly losing his jobs because of arguments with his different bosses. It took but very little to anger him. "The only place I ever got where I couldn't quit was in the army. I have always been so I would get angry quick." After the onset of his epileptic or "rum fits," he had them twice a month for about a year. He then let down on his drinking, and had no more spells until after his first anti-typhoid inoculation at one of our armories.

He was given the inoculation at about 3:00 P. M. and was fearful of it as he approached the needle. At about 7:00 P. M. as he paced back and forth on guard duty in front of the Armory, he suddenly felt faint, fell over against the wall, and then to the ground. He knew no more until the next morning at about four o'clock. He was told that he had lain like a person who was dead, and he was carried to his bunk in the Armory. On coming to, he felt tired and weak, just as if he had been working hard. He was transferred to the hospital, and during a residence of about four weeks, he had about twelve attacks. Some days he had two or three, and the duration of his unconsciousness varied from fifteen to forty minutes. Later, he was sent to the Boston Psychopathic Hospital for ten days, and then was returned to duty. After returning to duty he continued to have spells, so he was S. C. D.'d

with a diagnosis of epilepsy in June, 1918. He was inducted in service January, 1918.

After returning to civil life, he obtained employment in a knitting mill, working nights. He lasted but four nights, as on the fourth night he had three of his spells in close sequence. He soon got another job in a waist factory. He was there but one week, and during that time had five seizures. "My stomach would feel kind of faint. Then my left hand would start in. My fingers would feel just as if they were asleep. The pains would shoot up my arms and just as soon as it would reach my lungs with a pin and needle sensation, I would feel as if something was pressing on me there. (Feels of sternal region.) It would shut my wind off. Then I would lose consciousness. As a rule, I could get somewhere without falling. Once in a while, I couldn't save myself."

He was admitted to East Norfolk Hospital No. 34 on October 14, 1919. There he told physicians that, at the age of eighteen, he had had a number of dream experiences. One dream in particular impressed him very forcibly and had continued to do so. He dreamed of the shadow of death; it was following him, and the devil was about to overtake him. Following this dream he became extremely maniacal, and continued so for three days, being hallucinated and deluded. He tore things and attempted to run away and wander off. His visual experiences during said dream were very vivid and awe-inspiring, and not to be forgotten very soon by his low intellect and narrow mental horizon. He had been averse to hospitalization, and so during his hospital residence of one week, he was made worse, as the sight of others having convulsions was too much for his sensitized and uninhibited lower brain.

Following his discharge from the hospital, he returned to a rooming house which was managed by an ex-female attendant of a State Hospital. This woman means more to him than his mother or sister, with whom he could not placidly reside. In her report, she demonstrated how unreliable certain informants can be, for she stated that she had known the patient all of his life, and that she knew of no neuro-psychiatric taint or weakness in the family. She further told that he had had from ten to twenty-eight seizures per month, all diurnal. She could tell when a spell was coming on, as she noted that the blood vessels of his hands would enlarge. He would begin to tremble and shake, and then would fall unconscious, convulse, bite his tongue, froth at the mouth, but would have no involuntaries. She had noticed that there would be a spot of absolute whiteness the size of a large thumb nail, on his chin, whereas the remainder of his face would be very red. She had found him forgetful, excitable, stubborn and timid, and fearful of any

hospitalization. When he was notified to report at Boston for reexamination, he at once became fearful that it meant hospitalization, and the next day he had seven convulsive seizures. The last two were the worst she had ever seen him have.

This man, with one exception, had always been labelled epilepsy, and even the examiner who eventually termed him major hysteria had previously diagnosed him epilepsy. The following descriptive reports of two of the patient's attacks show the reason for the change in labels. "He had two different convulsions just following his examination. He began by saying that he felt badly; he lay down and began to breathe heavily and rapidly. His arms became flexed and rigid; gradually the arms and legs became rigid and the head was retracted, forming a modified 'are de cerele.' The muscles of his jaw became fixed, drawing the mouth open, and the pupils dilated. At this stage, breathing stopped, and after about twenty seconds he began to relax and breathing was resumed. Relaxation was partial for about five minutes, when he began to breathe forcibly and rapidly. Jaw muscles became fixed. Pupils changed from contraction to dilation, and he again assumed the position of 'are de cerele,' and stopped breathing for half a minute. Then gradually he relaxed. There was no muscular jerking, biting of the tongue or lips, or frothing at the mouth, and no involuntaries. When consciousness returned, he waved his hands to and fro."

Neurologically, he was thin and of poor muscle tone. Radial pulse was 96. Vasomotor tone was poor. Deep reflexes were hyperactive and equal. He complained of being very constipated. He has gastro-enteroptosis, and has found an abdominal support helpful. Mental examination showed him to be slattern in personal attire, decidedly puerile in manner, and slow in cerebration. His memory was unreliable, and though it never was very good, seemed much reduced for recent events. Emotionally unstable, he became exceedingly fearful when hospitalization was mentioned. He feels absolutely dependent upon the rooming-house mistress. His general intelligence is very inferior. He averages from twelve to fifteen attacks a month. As to work, he did some very light hauling for a time, but any attempt to do heavy work precipitated a seizure.

In this particular case, the weight of evidence is in favor of hysteria, major, and yet, because of his very apparent mental deficiency, poor heredity and environment, along with exaggerated emotivity, the prognosis is malignant, leading me to say that I prefer to use the terms malignant convulsive state or benign convulsive state. There is no gainsaying the fact that this patient has "a permanent defect of his highest structures, hence the capacities of the

lower levels of the nervous system are permanently enhanced." In the group of one hundred, there are many other similar cases which cannot be set forth in the time allotted, but they all well exemplify Rosett's claims under the caption, "The Reciprocity of Nerve Functions." Moreover, one is with all fairness obliged to seriously consider that work of Cannon, in which he has shown that painful and prolonged emotional states cause increase of the adrenal secretion in the blood, and with the addition of fatigue, result in toxic changes which are destructive to liver and brain cells. The blood in these conditions also manifests increased coagulability and sugar content. Plainly, it is a combination of circumstances which brings about convulsive seizures, either slight or severe.

The next type of convulsive cases which one naturally expects to find among ex-service men is the post traumatic, particularly those following head and brain injury. Sargent in 1921 reviewed over 18,000 of craniocerebral wounds with skull defect, which resulted from injuries sustained in the late war. Of these, approximately 800 (only 4.5%) had developed epilepsy. As to the reason why, Sargent was of the opinion that "a given stimulus was not effective for all brains, and it was necessary to assume in those patients who developed fits, a tendency to epilepsy because of a relatively low degree of stability of the nervous tissue." From my study of convulsive cases, I am compelled to agree with Osnato when he states "that a more complete explanation would have to consider conceptions of Clark, concerning the psychogenic origin of epilepsy, and those of Cannon and Crile, based on their work on the conditions of painful emotions, fear, anger, and fatigue." It is assumed that not only epinephrin, but also other toxic substances, are produced in the severe affective states mentioned, and in fatigue, which give rise to the convulsive phenomena of epilepsy.

Case 2. A British ex-soldier, aged thirty-eight, who gives an average pre-war history, received a very severe craniocerebral injury with fracture of the skull, when struck by shrapnel. Six months afterwards, he began to have convulsive seizures, accompanied by unconsciousness. These attacks increased in frequency and severity. At first he averaged four attacks a month, all diurnal. Two months after the injury to his brain, his left arm became paralyzed. Before his convulsive state, his head is always first drawn to the left, eyes blink, body becomes tonic, then clonic, bites tongue, fights and thrashes around; face is cyanosed. During the seizure, his left side is lifeless and apparently paralyzed. Following his attack, he sleeps from two to three hours. During 1923 most of his attacks were nocturnal. Since his brain trauma, he has been exceedingly touchy and ir-

ritable, and before taking bromide or luminal, he could not talk to anyone more than a minute without getting all excited. The least bit of excitement seems to bring on his attacks. He cannot work without something on the top of his head, as if otherwise feels as if he were spinning around like "water in a bag." He therefore wears an aluminum head piece for protection. To be obliged to work because of insufficient compensation keeps him tense. He has continual headaches in vertex region. "I can't talk with anybody for any great length of time without having a funny feeling come over me. I feel as if I'm going to die." Neurological examination, made on May 9, 1923, showed him to have a very large depression in the frontal region of skull, where a piece of frontal bone, $1\frac{1}{2}$ " to $2\frac{1}{2}$ ", had been removed. The pulsation of the brain was very perceptible when he stooped over. The cranial nerves were normal. Radial pulse was 100. All deep reflexes were present, equal, and hyperactive. He was very unsteady in the Romberg position. On May 16, 1924, his deep reflexes were diminished and he was much more steady in the Romberg position. Radial pulse was 88.

He has faithfully taken $\frac{3}{4}$ grain of luminal three times a day along with 15 grains of sodium bromide at night, but without much benefit. Mentally, he is morbidly introspective.

In contradistinction to Case 2, we have Case 3. An American ex-soldier, aged 27, who we know positively was of good stock, and was clean and well before receiving a compound fracture of his frontal bone, as a result of a shrapnel wound. He received less severe wounds in other parts of his body. Several operations were performed upon his head. A small piece of shrapnel was removed from his brain. He has not had a convulsive attack mild or severe, but he has noticed after much exertion that his left arm is weaker than the right, and that when he works hard, or lifts heavy objects requiring much stooping over, he has dizziness and throbbing headaches. This man entered vocational training a month after his discharge to prepare to become a teacher of manual training. Furthermore, he is single. Mentally, he is optimistic. Neurologically, he presents a depression, two inches in circumference, in the left frontal region, with loss of both tables of the skull, so that pulsations of the brain are visible. He has done well in his training.

These two men, who experienced much the same type of craniocerebral injury and skull defect, have residuals which for the most part are not alike. It just demonstrates that there must be other exciting causes to produce convulsive or unconscious states. I personally feel that a man's type of emotional make-up has much to do with not only the development of convulsive or unconscious spells, but also their

persistence. This is well demonstrated by the next patient's report.

Case 4. This man, aged twenty-four, had malarial fever, followed by pulmonary tuberculosis, in September, 1918. On June 25, 1919, he was thrown from an auto-ambulance, landing on his head and was knocked unconscious. About two months afterwards, he had his first unconscious spell while walking along a corridor in the hospital. He was unconscious for about two hours. On coming to, he was befogged and irritable. His second attack was two months later, and it was after this that he began to foster the idea that said spells were going to be chronic. This fear was augmented when he was told by one of the officers that he had epileptiform seizures, but that he might outgrow them. From then he had on an average three unconscious spells a year. "When I go into a strange place I immediately get nervous, whereas at home or in any place where I'm acquainted, I don't. I imagine it is the fear that I'm going to have a spell." He persistently indulged in morbid anticipation, and whenever he went to a lecture, an entertainment or any place where there was an assembly of people, he got to saying to himself: "Suppose I have one of my spells in here before these people," and this thought would decidedly create more fear with its associated bodily changes, so that he would make his exit in preference to fainting. About January, 1922, he started in to take some special medicine, an Indian formula, obtained from the seventh son of a seventh son. This medicine, in conjunction with faith and fervent prayer, sublimated his fears so that he lost them. He had no spells until July, 1924, when after acute infection, which lasted about a week, and during which he had headaches and general malaise, he suddenly flopped over on the floor, and was unconscious for an hour. He bit his tongue. On coming to, he was confused and clouded. He had difficulty in getting his breath, and seemed to gasp. Immediately, he feared he was going to die, as he had never had his breathing act that way before. The week following, he stayed in bed, dreading to look at any book or paper, as any blurring of vision made him fearful that he would have another spell, and while in bed he kept his eyes closed most of the time. "I was more in fear and nervous than before. I had, as you know, reached the point where I believed I was cured of those spells, and then to have that happen upset all my optimism. I became very discouraged." His old fears have returned, and very complete general examinations, with X-rays from stem to stern, have not answered his query, "what is it inside me that causes these spells?"

There has been much reported as to vasomotor instability and cerebral anemia in unconscious and convulsive states. One patient

in the group had, owing to shrapnel wound of right side of face and neck, his right external carotid tied off. Two years and a half later he had his first unconscious spell, and they soon occurred once every two weeks. Luminal has been beneficial in that his attacks are less frequent. "I have had several spells when I thought I was going to have a convulsion, but by walking rapidly, I was able to stave it off." Certainly, it was not just the tying off of the carotid artery that brought on his convulsive habit. Emotional unrest was a contributing, exciting factor.

SUMMARY

As a result of my study, I have found that there are many factors which take part in producing convulsive seizures and unconscious states, and that a physician treating such conditions should not be careless as to detail in his examination of the patient. Diversity of diagnosis and treatment, along with telling a patient he has epilepsy, if he really hasn't, only hamper the attainment of good results, especially among ex-service men.

(2) Fright and cranioerebral trauma are the predominant, exciting causes, but many convulsions were apparently provoked by infection and inoculation, yet only in individuals who were constitutionally defective.

(3) Phenobarbital and bromides, by slowing up nerve function, render the patient less convulsive and more hopeful, and in a small number of cases have furnished an almost complete recovery. The dose of these drugs has to vary with the reactivity of the individual. We should not let such drugs curb further intensive study of our patient.

(4) There is more and more need of education as to mental hygiene, and healthy and sane parentage. It is very evident from this group of patients that heredity and environment both contribute very much to the development of the convulsive habit.

(5) Most of Rosett's deductions have been fulfilled clinically, and pain, hunger, fear, and rage, as well as fatigue, do bring about bodily changes, as Cannon and Crile have ably demonstrated.

(6) It is folly to quibble over labels when, regardless of whether it is epilepsy or hysteria, the prognosis is poor. No doubt, in private practise, this would be different, as there, morbid self-pity isn't so often encouraged, and yet, even there, the prognosis is many times poor.

(7) Parents who are threatening, tyrannical, and over-emotional, as well as those who are alcoholic, are just as disintegrating and toxic to the central nervous system of their children as the fear states produced by contact with repeated shell explosions, in our soldiers, during the late war. After all is said and done, life, from the time of conception until the final dissolution, is for most of us a continual warfare. Our different battles may vary in intensity and duration, dependent oftentimes upon our superior officers, who in time we get to know were either a help or a detriment to us throughout our different conflicts. The convulsive habit has got to be fought against just as much as any habit which is inimical to the organism as a whole. Parents, the superior officers of children, need more training in habit clinics, inaugurated by Thom, to properly guide them, just as much as superior officers, who were not hard boiled, did in the last war. In this way, we may prevent the habit formation of nervousness, convulsiveness, and unconsciousness.

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A NEW PURGATIVE, THE OIL OF THE "CASTOR OIL FISH," RUVETTUS

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There is to be found a fair amount of data on this subject, but it is widely scattered and in journals and books which the general public, and far less the medical faculty, are not likely to run upon. Much of it came to me while I was serving as editor of the third and index volume of the Bibliography of Fishes published by the American Museum. From these citations other references have been run down, and in this manner all the data have been brought together in the hope that it may be made as accessible as it is interesting.

THE ATLANTIC PURGATIVE FISH, THE "ESCOLAR," *Ruvettus pretiosus*

This fish was first described by Dr. Anastasio Cocco in 1829 from the Straits of Messina. I have not been able to find the journal containing his description, but it is not likely that his article contains any reference to the properties of its oil. In the Mediterranean it has been taken at Genoa, Naples, Palermo, Malta, and at Spalato (Dalmatia), also at Nice. We may consider it a migrant here from the Atlantic. In

the Atlantic it is taken on the coast of Portugal, the Gulf of Gascony, at Madeira and around the Canaries, to which it migrates in the winter. On our side it has been taken in Cuban waters where it is not uncommon, 2 specimens were captured on the Grand Banks off Newfoundland in 1891, and 4 specimens were taken at Bermuda in the winter of 1911-12.

It is a deep water fish and must be sought for in depths of 200 to 700 fathoms, and best on dark nights, according to Poey (1854), who also says that, when brought to the surface, the Cuban fish looks like a luminous or phosphorescent ball. However, no other describer of the fish refers to this phenomenon, nor have any luminous organs been found in its skin.

Cantraine (1837), whose description is the earliest I have seen, speaks of its flesh as a great delicacy, much sought after by epicures, but makes no reference to the purgative action of its oil. This matter is first referred to briefly by R. T. Lowe (1841), who first described our fish from Madeira under the name *Aplurus simplex*, "Escolar." He says of it "The flesh of this very singular species is said to be extremely rich, and the bones, it is affirmed, abound in an oil or marrow, which, when they are sucked incautiously, produces diarrhoea." Later, in the general work in which he brought together all his observation on Madeiran fishes, he writes at greater length (1843-60).

"The flesh when cooked is delicately white and flaky, but soft and insipid; and both before and after it is dressed, abounds, as if it had been steeped, in a pure limpid oil, which is not, however, at all rank or strong in taste. On this account, and from the unsightly color of its skin, and general coarseness, it is but rarely seen at English tables: and, eaten incautiously, it is moreover said to cause speedy diarrhoea. It may, however, certainly be eaten moderately with impunity; and the effect in question is sometimes ascribed to a peculiar oiliness or richness in the bones. Dogs are, indeed, affected violently for some time, apparently by feeding chiefly on the bones and skin: but in any case the effect seems merely that of a strong dose of oil; being unaccompanied by any other symptoms."

Valenciennes, in his report on the fishes of the Canaries collected by Webb & Berthelot, gives no further data about *Ruvettus*, but contents himself with saying that the flesh is excellent and with quoting Lowe as to the purgative action of its oil.

Our last reference to the Atlantic form is to Poey (1854), the Cuban ichthyologist, who says that the fish is a rather rare one owing to the difficulties of catching it. It schools in September and October and must be fished for on very dark nights, and at depth of 300 fathoms. He concludes:

"The flesh is very white, and when cut appears covered with a milky fluid, which would be alarming in a barracuda, but in the 'Escolar' it is not a bad sign, as the fish may be eaten with safety and has a pleasant taste. The bones of the head are rather soft, spongy and filled with an oil, which can be sucked out and swallowed, and which then passes through the alimentary canal almost before one can think. This is known to everyone although I have not tried it myself."

The Portuguese name "Escolar" rendered by Poey "Scholar," does not mean scholar or student, but according to Lowe (1843) is derived from the Spanish *assacolar*, *acacolar*, or *acicolor*, to scour or burnish, particularly of metal objects like gun-barrels. Then the name Scour-fish may be explained by the fact that its rough scaly skin has a sand-paper-like roughness and may possibly have been used for this purpose. However, in view of the purgative properties of its oil, a new significance may be given to this common name.

Curiously enough I have chanced upon an account of another Atlantic purgative fish in Walter Charleton's "Onomasticon Zoicon" published at London in 1668. On page 144 he writes of a fish which is called "Mæna, the Cackeler (*à caccando*) because it is laxative to the eater, and purgeth the belly. Germani *Bizling vocant*." This can hardly be our fish since it is listed among littoral forms. Cuvier and Valenciennes list a fish, *Mæna vulgaris* as synonymous with *Sparus mæna*, commonly called *mendole*. They say nothing about any purgative effects following the eating of its flesh, which they allege is poor tasting. Charleton, it may be noted, was physician to Charles II of England.

THE PURGATIVE FISH OF THE PACIFIC, THE "PALU," *Ruvettus pretiosus*

For the "castor oil fish" of Oceania we have much more and very definite and interesting data. The first accounts which have been noted are from the pen of the well known Australian trader and writer, Louis Becke. In a book published in 1897 he says that: "Its flesh is greatly relished by the natives, both as food and for its highly medicinal qualities in some complaints. It is, however, of such oleaginous character that it is only eaten alone when needed as a purgative; generally it is mixed with beaten up *puraka* [a kind of yam-like root], and is very palatable, even to European tastes."

In 1896 the "Funafuti Coral Reef Boring Expedition, of the Royal Society [of London]," set out for that island, having asked the Australian Museum (Sydney) to send a representative along. Mr. Charles Hedley was so deputed, and made extensive collections. The fishes were worked up by E. R. Waite (1897). *Palu* were heard of but none obtained, but Waite obtained

a considerable account of *Palu*-fishing from Beeke (this will be noticed in another article), who said so far as concerns us: "It [*Palu*] is prized above all other fish in the Line and Ellice Groups. In the Line Islands it is called '*Te icka na paka*'—hardly translatable in polite English; but not to be too coarse we will say it means 'the fish that makes you obey the call of nature in double quick time.'"

In 1897, and again in 1898, the boring was continued and the Australian Museum again had a collector with the party. He was fortunate in obtaining a *Palu* and this was identified by Waite (1899) as *Ruvettus pretiosus*. Beyond making this identification, Waite gives nothing more of interest for this paper. However, when copies of these "Memoirs of the Australian Museum" reached London, there appeared in *Nature* a notice of the Expedition and of the capture of this remarkable fish which included a brief reference to the purgative action of its oil.

Finding that his accounts of the *Palu* were attracting considerable attention, Beeke, in another book published in 1901, devotes 10 pages to this fish. The description of *Palu*-fishing will be given in another article, but of its flesh and oil he says: "The flesh of the *Palu* is greatly valued by the natives of the equatorial islands of the Pacific for its medicinal qualities as a laxative," and adds that its oil is also much in demand as a remedy for rheumatism and like complaints. Its effectual use for this latter purpose he had knowledge of but did not try it personally. He says that when caught it is quickly cooked and wrapped in large leaves to prevent the loss of the oil. Impressed with the value of the oil Beeke "tried out" two large fish and obtained a gallon of oil which he sent to a big drug firm in Sydney but the vessel was wrecked en route and everything lost.

Finally in still another book (1905) Beeke speaks of fishing for *Palu* at Kusaie (Strong's Island) in the Carolines, and at Butaritari in the Gilberts, where it was "much prized by the natives on account of the valuable oil it yielded, apart from the richness of its flesh."

We now come to a first hand account from the pen of a scientific man who made actual trial of the oil of the *Palu*. Augustin Krämer (1901), the German ethnologist, had wide experience and knowledge of the South Seas, and his testimony is concrete and reliable. His interest in the fish was excited by Waite's accounts and also by Weber's (to be given later). He collected a specimen and sent its head to the Royal Museum of Stuttgart, but so far as I know it has never been reported on. Krämer heard of the fish at Maraki in the Gilberts. Later he spent some time at Makin (a low-lying coral atoll) in the Gilberts, and there was successful in catching a "Purgierfisch." The method of fishing and particularly the special fish used as bait will

be left for consideration later. Sufficient here is it to say that it is taken on the lee side of the islands, during the time of dark moon and at a depth of 200 to 300 meters.

More to our purpose is the following statement:

"The bones, namely the vertebrae, are tender, like the vertebrae with the lime removed as found in canned salmon, and full of a clear thin oil. This has a drastic effect in the new state, that is when the fish is not cooked, without however any [cramping] pain preceding. Cooked, it has a definitely milder effect. The meat flakes like that of a haddock, is milk-white in color and has a fine flavor."

Krämer then tells how he chewed up a vertebra and also ate a piece of the flesh about the size of an orange. Three hours later the oil produced its effect, four evacuations being brought about in two hours' time without any pain.

In his completed work on his journeyings in the South Seas (1906), Krämer, in describing his sojourn in the Gilberts, gives the same data as is recorded in the preceding paragraph.

Next we have a reference which carries our knowledge of the *Palu* far to the west to Nukumanu or Tasman island, the most northeasterly of the Solomons, lying in about 159°E. longitude. Parkinson (1907) figures a characteristic *Palu* hook from this atoll. The fishing there is done some distance off the island, in deep water, on dark nights only, and is a favorite sport. The fish itself is much liked and its purgative effect is well known. On Nukumanu and the neighboring islands it is known as "Lavenga."

One other citation remains to be given. Burnett (1910) merely says of the fishes taken at Washington Island (New York Island) that the "castor oil fish," taken at a depth of 100 fathoms, is the most interesting.

THE CASTOR OIL FISH OF THE EAST INDIES, "IKAN BABI" (PORK FISH) *Ruvettus tydemani*

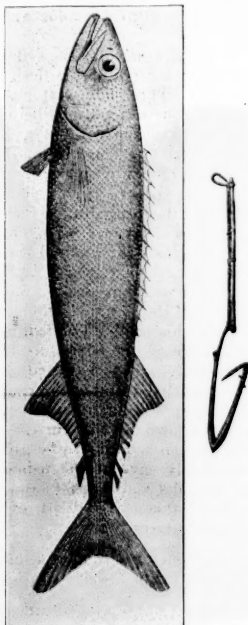
There is but one record, contained in three accounts, of this fish. A specimen was taken by the Siboga Expedition near the island of Binongka in the north-western part of the Banda Sea. Weber (1902 and 1913) describes it and notes that its oil is a powerful purgative—more powerful than castor oil,—this was ascertained by all hands eating freely of the fish. He found that the fish is abyssal in habitat, but is caught freely throughout the Banda Sea (and presumably throughout the East Indies generally) at depths below 250 fathoms. The natives of the islands, aware of its purgative properties, boil the fish and decant the oil, after which the flesh is very palatable and nutritious.

The fish being found specifically different from *R. pretiosus*, Weber named it *R. tydemani* in honor of Lieutenant G. F. Tydeman, the able commander of the "Siboga."

Frau Webber (1905), in her book descriptive of the expedition, says briefly that the ship's company ate it without ridding it of oil with results that were "tragikomisch."

DISTRIBUTION OF RUUVETTUS IN THE PACIFIC OCEAN

In this paper I have confined myself almost exclusively to a study of the fish in those low-lying coral islands where its oil is used medicinally. In the forthcoming paper on the structure and distribution of the peculiar and characteristic hook used in its capture, I have figured some sixty hooks, have described every specimen



Ruvettus pretiosus, the "purgative fish" of the central Pacific Ocean, as figured by Goode and Bean, from a specimen taken on the Grand Banks of Newfoundland in 1891. Note the spinous scales which give it its name "Scourfish."

To the right is the peculiar wooden hook, as figured by Krause, used for capturing *Ruvettus* throughout the central Pacific. Note the peculiar inward and downward pointing barb which is lashed onto the top of the short leg. The stick lashed to the top of the shank leg is a float intended to lift the hook with its bait clear of the loose coral when the whole apparatus is sunk to the bottom by a coral sinker attached to the line above the float.

known to me and have specifically noted the island of its origin. From this paper the data now to be given is briefly summarized. Acknowledgment should be made just here to Edge-Partington's invaluable work.

In the Pacific this fish has a very wide distribution, but according to Beeke is found only among the low-lying coral atolls, which fall away steeply to abyssal depths, never around

high islands like the Fijis, which have gentle submarine slopes. There seems, however, to be no sound reason for this conclusion. If *Ruvettus* is not taken around mountainous islands the explanation is probably to be found in the fact that to reach the depths which it frequents the natives would have to go off shore twenty or twenty-five miles. Since plenty of other excellent fish abound nearer shore, they devote themselves to fishing for these rather than expose themselves to wind and weather by going further out.

That this conjecture is correct has been shown by my studies on the distribution of the curious *Palu* hook. In the paper above referred to, a figure will be given of a hook procured at Southeast Island, Louisiade Archipelago. I have been unable to ascertain the elevation of Southeast, but other islands of the group attain a height of 3800 feet. Further, in this paper, there will be figured three *Palu* hooks from Tahiti and data presented to show that *Ruvettus* is caught off Manu'a in the easternmost part of the Samoan group, an island whose shore falls off steeply into deep water.

The most easterly point where the *Palu* hook has been collected is Fagatau or Agatau island, in the Taumotu or Low Archipelago in longitude 140° 50' W. The most westerly collection was made in New Guinea, in which the exact locality is not known but we will take the southeastern peninsula, where the meridian of 150° E. crosses it. The east-west distribution then covers 69° of longitude, or 4600 miles. In the same way the recorded north and south distribution reaches from Kusaie (Strong's Island) in the Carolines, 5° N. latitude, to New Zealand. Here, again the locality is not specified but we will take parallel of 40° S., which roughly divides New Zealand into halves. Our north-south range of the *Palu* hook then covers 45° of latitude, or approximately 3100 miles.

In this great boundary in the south central Pacific, a region 4600 miles east and west by 3100 miles north and south, we find the *Palu* hook used and the purgative fish taken at the Paumotu, at Tahiti, at Washington Island, at Niue (Savage Island), in the Manihiki, the Union Group, the Tongas, the Samoan Islands, the Ellice Group, at Nauru (Pleasant Island), the Gilberts, the Carolines, the Solomons, the Louisiades, New Guinea and New Zealand. It is also taken at Honolulu (where it is called *Walū*), in the Banda Sea, and in Japanese waters. Hence, I feel justified in saying that in one species or another *Ruvettus*, the purgative fish, is found throughout the whole tropical and warm temperate Pacific Ocean.

THE ACTIVE PRINCIPLE OF THE OIL OF RUUVETTUS

It is greatly to be regretted that no effort has ever been made to analyze this peculiar oil and ascertain the purgative agent or principle in

which it abounds. This interesting problem still awaits some enterprising biological or pharmaceutical chemist.

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A SIMPLIFIED AND TRUSTWORTHY MEANS OF MEASURING STATURE

BY W. R. MILES, PH. D., AND H. F. ROOT, M. D., BOSTON

TOTAL body length is one of the most generally important of all clinical measures because it is a fundamental factor involved in studies of growth, nutrition and metabolism. A variety of methods and devices have been employed in obtaining the stature measurement in spite of its apparent simplicity.

Three essentially different postures have been used in measuring body length: (1) Lying down; (2) Standing erect without support; and (3) Standing erect against a rigid vertical. With the subject lying horizontally on his back the soles of the feet are applied to a foot-board from which the distance is measured to the top of the head. This is the method of Du Bois and Du Bois¹ in connection with their "linear formula" for body surface area. It is the method of the anatomical laboratory in measuring the dead body, in dealing with apes or monkeys, and obviously is the one that must be used with newborn and very young children². This position gives the maximal body length. It is, however, somewhat cumbersome as a method with adults, unless there is available such a device as the swinging table of Frassetto³, which allows the subject to stand in position on the foot-board with the table at his back and then to be swung into the horizontal plane.

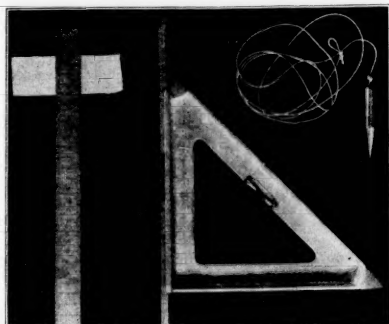
The subject standing erect without any support from a rigid vertical is the posture officially recommended by anthropologists. This was adopted at the International Congress of 1912 at Geneva⁴ and of course is particularly well suited for field work with primitive and superstitious peoples. Fatigued or weakened individuals find it difficult to maintain the unsupported position without considerable swaying⁵, and as a posture it tends to give a minimal value for stature.

A more strictly standardized posture which makes for easy cooperation on the part of the patient is to have him stand erect with heels together, and with heels, buttocks and shoulders against a wall or rigid vertical. Usually the occiput will also touch the vertical. The head is held so that the subject is looking straight forward with the visual and binauricular axes horizontal. The arms hang in a relaxed position with palms inward. This posture was used in the extensive anthropometric work carried on in the Medical Department of the United States Army 1917-1919⁶ and is recommended as standard by Dr. Hrdlicka, Curator, Division of Anthropology, United States National Museum. Although widely adopted⁷ and generally regarded by most physicians as the standard method of taking the height, it is a fact that a large part of the equipment at present in use does not conform to the requirements. The clumsy, stiff stadiometer and the height measuring rod arranged in connection with weighing scales are devices poorly adapted to the needs and standards of physicians.

For the adequate measurement of stature under the conditions above outlined all that is necessary is an accurate scale attached to the wall at a known height from the floor and a light square or right angle. This latter is held in the hand and moved along the scale until it comes into gentle contact with the vertex. This is essentially the equipment recommended by Broca, Hrdlicka, Davenport, Baldwin and many others, but it is so simple as to be difficult to obtain ready made.

An arrangement found very convenient and trustworthy for measuring statures or partial heights in the hospital, laboratory, school or factory is illustrated in the accompanying fig-

ure.* Two meter sticks of maple, carefully and clearly calibrated in centimeters, half centimeters and millimeters, are arranged to be joined end to end by a short pin carried on one of them. Through each stick, in the edgewise direction, two slots are cut so that by the use of four short strips of common adhesive the continuous two meter scale may be easily secured to any convenient door casing, concrete wall or other vertical plane. The square is a machined aluminum casting weighing about 14 ounces. The short sides of this right-angle triangle



Equipment for measuring stature and partial heights.

are $8\frac{1}{2}$ inches in length and one inch in width, i. e., the width of the meter sticks. Along one of these short sides is a narrow lip. When the triangle is applied to the scale (see illustration) it may thus be moved squarely in reference to it, and also without any interference from the strips of adhesive which support the scale.

It is obviously an easy matter to transfer or transport such a measuring device from one place to another. It does not mar the locations to which it is attached and the slight projection of the scale from the wall serves to assist the patient in assuming a posture which is vertical in both planes. The wooden scale is rather more lasting than similar paper scales. There are also advantages in using two meter sticks rather than a scale of a meter's length placed one meter above the floor. The continuous scale

*This equipment may be obtained from Warren E. Collins, Specialist in Metabolism Apparatus, 584 Huntington Avenue, Boston. On special order the two meter sticks may be supplied also graduated on one side in inches and fractions continuously throughout the full scale length.

enforces the selection of a location where the floor and wall have a direct right angle relation; it facilitates easy inspection to note if all is in proper position for use; and makes the scale available for measuring small children as well as for taking the sitting height and other partial lengths of adults.

The apparatus here illustrated provides for the simple recording of the "sternal notch height" or other partial lengths measured by the usual method of projection^{1, 2}. On the long side of the triangle is a leveling bulb. This side is held horizontal with the right angle up. One point is placed on the landmark, the height of which it is desired to measure, and from the other, where the bubble indicates horizontal position of the triangle, the plumb line is dropped to the floor. The line is then applied to the scale. In this way it is possible to measure even obese subjects with considerable accuracy.

It is self-evident that in careful measurements the patient should be without shoes or hampering clothing, the hair should be well parted at the vertex and the square brought against the head without undue bumping or pressure. The scale should be read while the patient and square are in position and the reading checked after he steps away. The fact that stature is generally greatest in the morning and according to Ivanovsky³ may be reduced even 5 cm. by prolonged standing, walking or burden bearing, is no excuse for taking it in a rough unsystematic manner. The variation due to continued standing points the desirability of adopting the routine for measuring stature, or partial heights that include the spinal column, after reclining, not at the end of a long period of standing. A standard erect posture calls for some standardization in relation to previous behavior.

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MEDICAL PROGRESS

THE PROGRESS OF NUTRITION

BY FRANCIS LOWELL BURNETT, M. D., BOSTON, MASS.

I. DISEASE AND THE ESSENTIALS OF NOURISHMENT

THE course of disease has been divided by McKenzie into the predisposing, incipient, advanced and final stages. In the last two the destruction of tissue has advanced so far that a cure is im-

possible; yet these are the stages chiefly studied in the great hospitals and magnificently equipped institutions. The result of these studies has led to the development of means to detect and treat the late manifestations of disease; and

this point of view has been so dominant that the chief aim of medicine—in the prevention and cure of disease—has been largely obscured.¹ Of late, however, from an understanding of the action of the accessory food factors or vitamins, it is very evident that a great deal remains to be learned about complete and proper nourishment. And while the exact nature of the vitamins has not yet been determined, it seems probable that they represent only one essential factor of the ingested material for maintaining the integrity of the body. In other words the alimentary mixture must contain complete nutritive substances or else some form of deficiency disease will be produced. But in vitamin studies as well as in most forms of dietary treatment, the amount and kind of food is adjusted and then its effect is observed on some remote part of the body. From this standpoint food in the stomach is thought of as nourishment in the body, instead of realizing that it is merely in a tube that goes through the body. To put nutritive material into the alimentary canal is one matter, but the absorption of nourishment by the body seems to be another; for complete and proper assimilation appears to be a very delicate and complex process, which is intimately related to a variety of highly specialized functions of the intestines. Furthermore there is wisdom in the inward parts, and these functions are only brought fully into action when the alimentary mixture is about right for the nutritive needs of the body. Consequently, the completeness of the alimentary mixture is not the only requirement, but there are also other essential factors, such as the amount of food, the proportion of the different elements, the preparation for digestion, the time of eating, and perhaps the demand of the body for nourishment and for rest that have to be taken into account. A consideration of all of these factors makes the proper nourishment of the human body a delicate and intricate process, but this is logical in appreciating the nutritive needs of the most highly perfected being. It seems reasonable to suppose therefore that when more is known of all the essential factors of nutrition, that the very delicate and complex equilibrium of the body in health may not only be understood, but also some of the minor deviations from this state in the predisposing and incipient stages of disease.

II. INTESTINAL FUNCTIONS AND RATES

In a critical conception of nutrition, the aliment does not pass without interruption along the intestines, but is acted on by a great variety of complex functions. In the segmenting and mixing and the kneading and working over, the absorbing membrane of the gut is brought into intimate contact with the products of digestion, and in this way assimilation takes place. Many of the major forms of intestinal motility have been known for some time, but lately Forsell²

has made an intimate study of some of the minor mechanical movements. All of these actions however appear to bear some relation to the time taken by substances to pass completely through the gastro-intestinal tract. By means of barium meals and roentgen-ray pictures taken five, ten, twenty-five and fifty hours after ingestion, and a seed test Burnett³ has demonstrated that the intestinal rate not only varies a great deal in different persons, but may also vary somewhat from time to time in the same person. A somewhat similar test of assimilation has been made by Kahn⁴ in infants. He found the average time of the healthy to be fifteen hours, but in those with indigestion the time was reduced to ten and even six hours. The failure of assimilation evidently has an influence on the potency of the digestive fluids. At any rate Carlson⁵ in a very comprehensive study of the gastric juice in health and disease has found that hypersecretion does not exist, but that there are all degrees of hyposecretion; and the loss of potency is in general correlated to the degree of cachexia.

III. THE NOURISHMENT OF CHILDREN

In controlling the diet of children it is necessary to realize that some sort of assimilation is going on continuously, but the amount and kind is evidently very variable. A change from a condition of good nutrition to mediocre or poor is very insidious and does not give rise to symptoms. In consequence of this fact it is necessary to be ever watchful and keep a check on the development and well being of the child. And if disorders that have their origin in childhood are corrected a more serious disorder of youth or manhood is likely to be prevented.

"Human Types and Growth Reactions" is the title of a clear and well expressed study by Stockard⁶ in which he describes a lateral and linear type. The author alludes to the bad influence on structural development by disfunction of the glands of the internal secretion, but does not describe to any extent the effect of malnutrition on the bony framework—as shown in rickets. The food requirements of children has been investigated very thoroughly by Holt and Fales⁷. They found that healthy children select about one half of their food in carbohydrate, a third in fat, and a sixth in protein. As children do not have an instinct for the selection of food, a more valuable study of their food requirements might be made by adjusting their diet according to the assimilation, and then observing its effect on their development by comprehensive health examinations from time to time for several years. The nutrition clinics for delicate children continue to develop, and are undoubtedly a factor in promoting the health of a community. The Indices of Nutrition by which the development of children are determined has been made the subject

of a comparative study by Clark⁸. Of the 506 children examined, 227 were boys and 279 girls. By the Wood Standard, 20% were found 10% underweight, 13% by the Dreyer and 17% by the Pirquet. Gulick⁹ made a detailed study of over-nutrition in an adult, and came to the conclusion that in such an individual the metabolism is extravagant: food is burned freely to get rid of it.

IV. THE ACCESSORY FOOD FACTORS OR VITAMINES

Up to a few years ago the accessory food factors or vitamins were generally alluded to as the anti-rachitic or fat soluble A, the anti-neuritic or water soluble B, and the anti-scorbutic or C. Lately, however, attempts have been made to subdivide one of the factors and isolate another. In this way Funk and Dubin¹⁰ reported the separation from Vitamine B of a substance which stimulates the growth of yeast and acts on micro-organisms, and which they have provisionally called Vitamine D. But this new vitamin has not been generally accepted. Then Evans and Nishop¹¹ have reported the isolation of a food factor essential for reproduction which they provisionally called "X." But Sure¹² suggests that if "D" is accepted, the letter "E" is better to represent this new factor.

From the acquisition of more exact knowledge of the action of the vitamins the general feeling is not to consider them as definite substances. This is no doubt because they do not always act with one investigator as they do with another. For instance, disturbances of bone formation have been produced by the absence of the anti-scorbutic factor; and then in one deficiency condition—pellagra—which is evidently due to the absence of animal protein in the diet no letter has been ascribed to this factor. Cramer believes "that the digestive tract is the key to the problem of the mode of action of the food accessory substances. The food itself contains specific substances on which the integrity of the apparatus responsible for the digestion and absorption of food depends. These substances may therefore be looked upon as food hormones"¹³.

V. RICKETS. IRREGULAR AND CARIOUS TEETH

Of all the deficient conditions of disease rickets continues to receive the greatest study. Interesting and valuable observations have been made in producing it experimentally, but of even greater importance is that a great deal has been found out to relieve and prevent it. Indeed Howland¹⁴ in a comprehensive review of the disease states that "Rickets has had its day." The disease is due to a lack of calcium in the bones. But as 85% to 90% of calcium is deposited in tri-calcium phosphate, the elaboration of phosphorus also has an intimate relationship. Howland and Kramer¹⁵ approached the subject of calcification experimentally. They made an artificial serum of sodium bicarbonate, mag-

nesium and sodium chloride; put in varying amounts of calcium and phosphorus; kept it at a constant temperature; and a pH of any degree by carbon dioxide tension. Gelatine for a colloidal substance was sometimes added. Under these conditions it was possible to bring about a precipitation of the calcium, by increasing the pH, by raising the temperature, and by varying the calcium and phosphorus concentrations. But in the child the deposition of calcium takes place because the serum has a higher phosphorus concentration than in the adult; and an increase in the calcium does not compensate for a low phosphorus content. Therefore it is chiefly the diminished amount of phosphorus in the serum that is responsible for a failure of calcification and this in turn is evidently due to defective absorption. The retention and absorption of the mineral elements is less with cow's than with human milk. The reaction of the intestinal tract also has an influence on the salts taken into the body. But the fat in the diet is the greatest factor, for the absorption of phosphorus and calcium are proportionate to the amount of this kind of food¹⁶ and ¹⁷. And by the addition of tri-calcium phosphate to the food of rachitic dogs, the condition was not improved at all¹⁸. For some time the action of sunlight and ultra-violet radiation has been known to have a beneficial influence on the disease, but Orr and his associates¹⁹ found that the action was due to increasing the amount of calcium and phosphorus absorption. On the other hand Eckstein²⁰ proved that if young animals receive an adequate diet when living in darkness or exposed to red or blue light for a long period of time, the absence of white light not only does not produce rickets but does not influence their rate of growth or development.

Anatomically the teeth form part of the bony framework, and the eruption and composition are influenced by factors that affect the skeleton. Such a fact is strikingly apparent with a rachitic and scorbutic diet. Normally the dental ridges of the maxillae are broad and allow sufficient room for the teeth to erupt in perfect alignment; but under the influence of an inadequate diet the ridges are considerably narrowed and the teeth erupt irregularly. Howe²¹ and others have produced irregular and carious teeth by feeding animals on deficient diets. And Toverud²² has found by a chemical analysis of these defective teeth that the calcium is partly replaced by magnesium. Such teeth are evidently much less resistant to the agents that produce caries.

VI. OPHTHALMIA

For some time investigators studying the effects of inadequate food—particularly deficient in the fat soluble factor—have observed that many of the animals developed an inflammation of the eye, which has been called a Xeroph-

thalmia. The condition is especially interesting because it seems to demonstrate the natural immunity of health and the lowered vital resistance of a deficient condition of the body. It is explained in this way. In health the animals have a secretion from the glands of the eye of sufficient potency to kill the bacteria that are constantly alighting on its surface; but after the animals have been fed on an incomplete food for a few weeks the lacrimal fluid loses its potency and the bacteria produce an inflammatory condition. Osborne and Mendell²³ have tried to reduce the inflammation with antiseptics but got only a slight improvement with a few of the solutions. However when they added the essential vitamins to the food the condition of the eye became comparatively normal. Yudkin and Lambert²⁴ have studied the pathogenesis of the ocular lesions and have found that a low grade inflammation originates in the conjunctiva and spreads to the cornea. Then Lambert and Yudkin²⁵ have studied the parocular glands accompanying this disorder and noted marked degeneration and inflammatory changes in the Harderian and questionable changes in the lacrimal and Meibomian glands. Combining this fact with the lesions of the internal glands found by McCarrison²⁶ in depleted animals, it would seem as if nutrition has some influence on the production of hormones.

VII. PELLAGRA, ECZEMA AND PSORIASIS

Although pellagra has generally been thought of as a deficiency disease due to the insufficient ingestion of animal protein, new notions of its etiology continue to appear. Thus Jobling and Arnold²⁷ from a very incomplete study have been much impressed with the possibility that it may be caused by a photo-dynamic substance elaborated by an organism in the intestines. They isolated a fungus, which apparently belongs to the *Aspergillus glaucus-repens* group, made an extract, and inoculated a few mice. The animals exposed to the light developed oedema and reddening of the ears and swelling of the eyelids. And a few exposed to the sunlight died. This organism is thought to develop in pellagrins on account of an excess of carbohydrate in the intestine. Then Hindhede²⁸ from a comparison of the extremely low protein diet of some of the Danish families with that of the pellagrous families in the South, is not convinced that the amount of protein alone is the essential etiological factor. And Goldberger²⁹ in a measure agrees. The point however is that by increasing the meat or milk in the diet, many patients have been relieved.

A discussion of this kind might go on without end, when the enormous possibilities of adjustment of the alimentary mixtures are considered. In a study of Eczema and Psoriasis by dietary treatment Burnett³⁰ has taken into account other food factors; that is the preparation of the food

for digestion, the amount of food ingested, and the proportion of the different elements, and these apparently have an influence on the amount and kind of assimilation as determined by the intestinal rate and the form of the feces. When all of these factors are under the patient's control there is increased assimilation and the condition of the skin improves. But if the alimentary mixture again becomes unrefined or badly proportioned the assimilation is diminished and the skin will again show lesions of eczema or psoriasis.

VIII. ANEMIA AND ARTERIO SCLEROSIS

Since Whipple³¹ published his carefully executed and controlled experiments on the regeneration of corpuscles in anemic dogs fed on various diets, occasional observations have been made on the relation of anemia to malnutrition. Thus McCarrison³² states that anemia was produced in animals fed on incomplete and unbalanced diets, although he does not describe how the lowered haemoglobin or diminished number of corpuscles were determined. Hupp³³ however made detailed examinations of the blood of rats on various diets and with one that was low in calcium and fat and produced a deformity of the bones similar to rickets, a severe degree of anemia was also produced. Whereas well-balanced diets which were deficient in iron did not reduce the haemoglobin.

Newburgh³⁴ has continued to make observations on arterio sclerosis in rabbits by feeding them an excessive amount of protein. The term athero sclerosis is intended to mean a primary lesion of the intima and not one secondary to lesions of the media or vasa vasorum. One group of fifty-one animals were fed on a diet containing 27% protein, and eleven living more than six months presented typical aortic lesions. In another group of twenty-four ingesting 36% protein some died in a few months and showed early lesions, whereas eight that lived more than four months had marked signs of athero sclerosis. Finally, of the one hundred and sixteen control animals examined, some of which had been used for drug injections and to supply blood for media only four showed changes in the aorta.

IX. TETANY AND EPILEPSY

There are various forms of tetany, but experimental tetany is produced by a removal of the parathyroid glands. Under ordinary diet and care most of the experimental animals (dogs) die in a short time. The cause of death has been thought to be due to a toxin that is elaborated in the intestine by the action of the proteolytic bacteria, and the parathyroid glands seem to neutralize this poison. Dragstedt³⁵ fed one group of growing dogs on white bread, milk ad libitum, and 60 grams of lactose. When the feces became liquid and acid the glands were removed.

Although none of the animals developed tetany, all of them died within ten days. A second group of full grown dogs were fed on boiled rice, beef heart and 50 grams of lactose for several days and the glands removed. The majority of these animals died in tetany or depression within ten days, although the remainder lived for more than a year. A third full grown group had white bread and milk ad lib. and 50-125 grams of lactose daily for several weeks. The glands were then removed, but about half of this group died. Some of the animals to survive were given meat in two or three weeks and tetany developed. Starvation did not prevent tetany.

Fasting in epilepsy was first advocated by Guilpa³⁵ but his claims for successful treatment were very indefinite. Within a short time Weeks, Renner, Allen and Wishart³⁶ made a very comprehensive study of this disorder. They not only starved one group of patients for three weeks, but with other groups tried the effect of a bulky diet, one excessive in the amount of food, one high in protein, a high carbohydrate, and one greatly overbalanced with fat. The fasting served to diminish the intensity of the attacks, but more than half of the patients had typical seizures. The result of this treatment was not considered beneficial. And all of the other diets did not prove harmful or beneficial. On the other hand the patients showed a most astonishing tolerance for food excessive in fat for they did not develop clinical symptoms, acidosis, or hyperglycemia.

X. ADENOIDS AND TONSILS

The palatine and pharyngeal tonsils are the only exposed portions of the lymphatic system. In childhood if they are hypertrophied and form a weak and non-resistant tissue, they are frequently thought of as a portal of entry for bacteria. Perhaps the enlargement of these glands is merely a minor phase of status lymphaticus in which individuals have little or no stamina. At any rate by feeding a few kittens on a high fat-normal calorie, high fat-high calorie, high sugar-normal calorie, high sugar-high calorie diets, Lefholz³⁷ has shown a relative increase in the lymph tissue according to the food ingested. The high calorie diet in either sugar or protein produced a marked increase in the size of all of the tonsils, but the increase was even greater with food containing an excess of fat.

XI. IMMUNITY AND TUBERCULOSIS

The isolation and identification of the bacteria causing many of the infectious processes was a great advance in the progress of medicine, but even greater benefits will be derived from a knowledge of the conditions that permit the organisms generally within and about the body from gaining a foothold. The Xerophthalmia already described is undoubtedly a phase of a lowered vital resistance. On the other hand

Werkman³⁸ fed some rats on a diet lacking vitamin A; and injected this and a control group intraperitoneally with a suspension of anthrax bacillus. The debilitated animals died in a few days whereas all but one of the healthy animals lived. The same results were obtained with two similar groups of rats with suspensions of the pneumococcus. For determining the effect of a diet without vitamin B pigeons were used. Debilitated and healthy birds were injected with suspensions of anthrax bacilli and pneumococci and only the healthy ones lived. In another study Werkman³⁹ found the agglutinin precipitins, haemolysins and bacteriolysins were as potent in the deficient as in the healthy animals.

The lowered vital resistance of inadequately fed animals to tuberculosis has also been observed. In an interesting study by Smith⁴⁰ the therapeutic influence of cod liver oil on debilitated and tuberculosis guineapigs was determined. But contrary to the generally accepted opinion, he did not find that the fish oil had any beneficial influence.

XII. HEALTH EXAMINATIONS

The practical phase of the knowledge being acquired by the enormous amount of study that is being carried on at the present time on nutrition, will be in its application to the maintenance of health. In the form used for taking the history of a person undergoing a health examination, Emerson⁴², Chairman of the Committee on Health and Public Instruction of the American Medical Association, has listed the following questions.

How often do you eat? Regularly? Where? Between meals? Time at meals? Are you a moderate or a hearty eater? and take one or more helpings at a meal of meat, fish, eggs, baked beans, green vegetables, starchy vegetables, pie, cake or pastry, sweets or sugar, fruit, salads, breads and butter? How much do you drink daily of water, milk, tea, coffee, soft beverages, spirituous liquors? How much and how frequently do you eat candy? These questions serve in a way to get information in regard to the character of the alimentary mixture and the nutritive condition of the body.

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NEW ENGLAND PEDIATRIC SOCIETY

Annual Meeting, November 14, 1924, Dr. Richard M. Smith In The Chair

THE COMPARATIVE COMPOSITION OF INFANT FEEDINGS EXPRESSED IN PERCENTAGES OF TOTAL CALORIES

BY DR. GROVER POWERS, NEW HAVEN, CONN.

Abstract

THE constitution of a great variety of infant feeding mixtures has been expressed in terms of the percentage which each energy producing component is of the total caloric value of the food mixture. This method of food dissection has been the means of extricating the feedings from a maze of metabolically meaningless quantitative relationships and made them available for comparative study. Stripped of encumbering nomenclature, the foods have been set forth on a significant basis in terms of the standard unit of nutritional currency—the calorie. On this basis, a host of apparently dissimilar mixtures have lost an artificial individuality and been classified as members of six distinctive groups. Here individual differences may be studied where they actually exist, i. e., in mineral content, chemical and biological values of protein, carbohydrate and fat, degree of denaturation and water content.

NEWER VIEWPOINTS IN INFANT FEEDING

BY DR. EDWARDS A. PARK, NEW HAVEN, CONN.

Abstract

PHYSICIANS have long appreciated that a frequency of stools has a different significance in infants breast fed and in infants artificially fed, but they have come to a full appreciation only recently of the fact that even in artificially fed infants a frequency of stools often has no sinister import.

Finkelstein was the first, so far as I am aware, to perceive clearly that diarrhoea, particularly in the young infant, does not necessarily denote indigestion, and that in the case of young infants coming into hospitals

diarrhoea is more frequently the result of an insufficiency of food in a qualitative or quantitative sense or of some peculiarity in the make-up of the infant than of damage to the digestive function.

I do not wish to imply that valuable information may not be obtained from the stools, or that a diarrhoea may not be of such character or severity as of itself to contra-indicate feeding altogether. I cannot emphasize, however, too strongly that diarrhoea in large numbers of infants is benign, and that the habit of automatically starving an infant just because he has frequent stools is fallacious and gives rise to disastrous results.

The discovery that many infants will do better when fed concentrated foods than when fed dilute foods, was a direct development of the method of feeding developed by von Pirquet and Schick and of the clinical observations of Finkelstein. The premature infant will not thrive on a dilute mixture, either because he is not strong enough to take or cannot retain a sufficient amount to meet his nutritional demands. For the same reasons, many feeble infants, not prematurely born, will not thrive so long as the food given them is dilute. Vomiting is more often the result of mechanical conditions than of indigestion, and the secret of successful treatment of vomiting in the great majority of instances is to give small quantities of concentrated food at frequent intervals. The use of concentrated foods is an enormous asset in the treatment of infants and of older children with dysentery and acute infections, who require high calorie feedings but are unable to take or retain more than a small quantity of food at a time. The experience at the New Haven clinic has been chiefly with concentrated foods made from undiluted soured milk. We are unable to see that such concentrated foods are any less easily digested than dilute foods, even when given to premature and the most feeble infants.

Discussion of the concentration of foods involves consideration of dilution with water.

The reason for the dilution of cow's milk is often attributed to Bidert who held that the indigestible element in cow's milk was the protein, and that the way in which to make cow's milk more digestible for the infant was to reduce the protein by diluting the milk and to raise the fat and carbohydrate by adding butter fat and sugar. Since the protein of cow's milk is approximately three times as great as the protein of human milk, Bidert advised the dilution of cow's milk with at least two volumes of water. Undoubtedly, however, the practice of diluting cow's milk sprang up spontaneously among the people, as have almost all other practices in infant feeding, when the substitution of undiluted cow's milk for breast milk was found to give rise to indigestion. It is certain, I think, that the sour milk mixtures need not be diluted and that nothing is gained by diluting them. I do not believe that any advantage is obtained by diluting sweet cow's milk more than one-half.

The chief, if not the sole, object of dilution of cow's milk mixtures should be to furnish the infant with a sufficient amount of fluid. If measured in terms of breast milk, the water requirement of the young infant is about 170 to 180 c.c. per kilogram of body weight and declines during the first year to not more than 120 c.c. per kilogram. The method of thinking encouraged at the New Haven clinic in the feeding of infants is, first, to determine the number of calories which it seems advisable to give; second, to decide upon the best distribution of those calories between protein, fat, and carbohydrate, making sure that the quantity of protein is adequate; and third, to determine the fluid requirement of the infant on the assumption that the average infant requires about 150 c.c. of fluid per kilogram of body weight. If there is reason to suppose that the infant will thrive best if given food in concentrated form, the water required in excess of that in the food is given between feedings. If no indication for concentration of the food exists, enough water is added to the feeding to bring up the quantity of mixture to the estimated total fluid requirement. It is scarcely necessary to add that more than 150 c.c. of fluid per kilogram of body weight may be needed under unusual conditions, as hot weather, fever, or dehydration. I cannot emphasize sufficiently that dilution of a cow's milk mixture, certainly beyond one-half, does not make that mixture more digestible and often is productive of great harm by causing the child to vomit or refuse food, so that he will receive too few calories to satisfy his nutritional needs. Dilution of milk mixtures is overdone in this country almost everywhere. The majority of infants sent to the New Haven Hospital on account of vomiting, vomit solely because fed mixtures of too large volume. The requirement in these cases was

not for a further dilution or reduction of sugar or fat, but for a reduction of the volume of the feeding.

In this connection, it is interesting to point out that the fluid need of the rapidly growing organism is much greater than that of the slowly growing or mature organism. If the adult of 70 kilograms required as much fluid in proportion to his weight as the infant of 5 kilograms receives in his breast milk, he would take 10.5 liters of fluid in each twenty-four hours.

To Marriott in this country, and to Finkelstein, von Pirquet and Schiek, belong the credit for the appreciation of the fact that many infants require from 150 to 200 calories per kilogram of body weight in order to thrive. Certainly, many premature infants will thrive best when they receive, at short intervals, concentrated food in daily amounts approximating 200 calories per kilogram of body weight. Atrophic babies often require from 150 to 200 calories per kilogram, and also babies convalescent from infections. Probably it is rarely necessary or advisable to feed an infant more than 200 calories per kilogram. Two hundred calories per kilogram, therefore, represent the upper limit of the caloric requirement. Harm can be done by over-feeding. It is always advisable, therefore, to aim to make the infant gain consistently at an average rate of speed rather than to make him gain with maximum rapidity, and the number of calories just sufficient to accomplish that end represents the optimal quantity of food which should be chosen. In the case of most mal-nourished infants it is not necessary to give more than 150 calories per kilogram.

When left to themselves, the young of almost all species of animals suckle at irregular intervals. Nature probably intended that the infant should nurse whenever his mother was available and he hungry. There can be no doubt, however, that the infant thrives best when put to the breast regularly. In the great majority of cases it is immaterial whether the infant is fed at three-hour intervals or at four-hour intervals. In the case of some infants, however, it is advisable, or essential, to give feedings at two-hour or at one and a half hour intervals, or, rarely, at hour intervals, or even less. I have reference particularly to premature infants, to feeble infants, and to infants who vomit. As already pointed out, the premature infant and the feeble infant become fatigued after taking small quantities of food, and will not take enough to meet their requirements if fed dilute mixtures at long intervals. As also previously mentioned, the infant inclined to vomit from mechanical causes will usually retain a small amount of concentrated food fed at short intervals, when he will not retain a large amount of a dilute formula fed at

long intervals. The physician often does those very things which he should not do in his treatment of the vomiting infant, when he lengthens the interval, reduces the carbohydrate, and makes the mixture more dilute. If "four-hour feedings" in a given case work, the four-hour interval is the best, for it is the most convenient; the next best, under ordinary conditions, is the three-hour interval. The point I wish to emphasize is that many premature, feeble, and vomiting infants will first begin to thrive when the interval is shortened to two hours or less, and that all absolute rules, such as that the interval should never be less than four hours when the baby vomits, should be relegated to the past.

Cow's milk was designed by nature for the calf and not for the human being. For many years pediatricians were unable to perceive this evident truth. There can be no doubt, however, that the digestibility of cow's milk for the infant is increased with cooking just as the digestibility of solid food is increased by that means. If condensed milk or dried milk possesses any superiority over fresh cow's milk, that superiority lies in the denaturation and chemical change to which the cow's milk has been subjected as the result of heat. Cow's milk is more easily digested after boiling for five minutes than after pasteurization, and I am under the impression that its digestibility may be further increased by longer cooking.

There can be little doubt that milk soured by the lactic acid producing organisms is more easily utilized by many infants whose digestive function is subnormal than sweet milk. Soured milk differs from sweet milk, among other things, in hydrogen ion concentration and in the physical state of its casein. It is the fashion, at the present moment, largely from the writings of Marriott, to think of the superiority of soured milk as resting solely in a hydrogen ion concentration which lies near the point supposed to be optimal for gastric digestion. It is probable, however, that its superiority rests quite as much in the fine division of its curd, and in other changes about which we have little or no knowledge. At the New Haven clinic we have not had sufficient experience with the sweet milk soured by the addition of lactic acid to be able to compare the effects with those of milk soured by the addition of the bacilli. Finkelstein, who has had an extensive experience with both kinds of sour milk, declares that the milk soured by the addition of lactic acid is inferior to the milk soured through bacterial action.

Many physicians seem to be under the impression that the use of sour milk in infant feeding is new. Sour milk undoubtedly has been used in Europe for the feeding of infants since artificial feeding began. The "Holländische Nahrung," composed of buttermilk

with the addition of cane sugar and flour, has been a folks' food for infants in Holland and Flanders from time immemorial, and came from the people to the profession on account of its intrinsic merits. The butter-flour mixtures are also a folks' food used for years by peasants in the Swiss Alps and so came to the profession.

Only a few words are necessary concerning the use of carbohydrates in infant feeding. If it is true that lactose is more apt than other sugars to give rise to digestive disturbances in artificially fed children, it is curious that the sugar in the milk of all species of animals should be lactose. One can postulate that lactose must be the best sugar for the young of the species as it naturally exists in the medium of the milk of the species. One can also postulate that nature has suited the milk of a given species to the young of that species with a nicety which gives her a license lacking to us, forced as we are to depend on adaptations of the milk of other species for the artificial feeding of the young of our own. All that is possible to say concerning the use of lactose in the artificial feeding of infants rests on experience, which teaches that lactose, when added to cow's milk, in particular to cow's milk dilutions high in fat, is more apt to give rise to digestive disturbances than are the other sugars. Cane sugar is probably the equal of any sugar for infant feeding. Two sugars are perhaps superior to a single sugar. A sugar and a dextrin are perhaps superior to a single sugar. A sugar and a flour in combination are probably superior to a single sugar. Flour or cereal mixtures are exceedingly well tolerated by most infants. I do not believe that flour is sufficiently used in the feeding of infants. The value of the combination of dextrin and maltose is probably over-estimated. Most infants seem to thrive when 7 to 10 grams of carbohydrate are added to every 100 c.c. of cow's milk, but many atrophic, feeble, and premature infants will not gain until the carbohydrate in the feedings has been increased to 14 or 15 grams per 100 c.c. of milk. The secret to the successful feeding of the groups of infants just mentioned lies in the use of concentrated mixtures rich in carbohydrate, as has recently been pointed out by Finkelstein.

If the infant cannot live for a part of the day in the sunlight, cod liver oil should always be added to the diet. Since the potency against rickets of cod liver oils is not known, it is a difficult matter to decide upon a fixed dosage. The careful work of Doctor Martha Eliot, and Doctor Edith Jackson, of New Haven,* indicates that fairly large doses of cod liver oil should be given, if rickets is to be prevented. By the end of the first month the infant should receive from one to one and a half teaspoonsful of cod liver oil daily and by the end of the second month two or three teaspoons-

ful daily. In the summer time the dosage of cod liver oil may be diminished or omitted altogether. Sunlight stops rickets; it is probably a more potent antirachitic agent than cod liver oil. Cod liver oil is to be regarded merely as a substitute for radiant energy. I am not sure that it is possible completely to prevent the development of rickets in the premature infant by any means. Cod liver oil, however, certainly exerts a curative influence even in the case of the premature infant, as is evident in radiographs, and should be given in large doses. If the infant is given the cod liver oil at an early enough age, he will like it, and the administration will offer no difficulty if the taste of the infant has been wooed from the beginning. The effect of cod liver oil in rickets or tetany is greatly diminished during periods of infection. This is a fact not appreciated.

The importance of the rôle which infection plays in the infant feeding problem has never been sufficiently emphasized. If the infant has no infection, almost always the problem of feeding is easy. Probably 80 per cent to 90 per cent of the difficult feeding cases in hospitals are in infants with infections. Another fact not generally appreciated is that many infants coming into hospitals greatly dehydrated, and with symptoms exactly resembling the so-called intestinal intoxication with acidosis, have septicaemia, as can easily be demonstrated by blood culture.

If there is any rationale in regard to infant feeding, why should so great a variety of formulas and proprietary foods exist for the feeding of infants? The reply in part is that there are not so many different foods as there appear to be, because many foods which seem quite different really differ from each other only in dilution, and yet other foods differ only in minor respects which amount to nothing. In major part, however, the answer to the question is that the protein can be burned and utilized, or can furnish carbohydrate and carbohydrate and fat are to a considerable extent interchangeable. In all foods fed to infants, at least 10 per cent of the calories must be furnished in protein. Almost all mixtures ordinarily used in infant feeding will be found to contain between 10 and 20 per cent of the calories in protein. It is a matter of little moment in the case of most infants whether the larger proportion of the remaining 80 to 90 per cent of the calories are furnished chiefly in carbohydrate and to a small extent in fat, or in smaller amounts of carbohydrate and larger amounts of fat. If the infant will gain on a butter-flour mixture, he will also gain on a mixture in which the fat has been largely replaced by carbohydrates. If enough cod liver oil is supplied to cover the fat soluble vitamine requirements of the infant and all other fat taken out of the

food, most infants will thrive certainly for a period of two or three months.

Though the fat can be almost entirely replaced by carbohydrate for a limited time, at least, and very largely replaced indefinitely, the carbohydrate can be replaced by fat only to a limited extent. Breast milk probably represents the upper limit of the proportion of fat and the lower limit of the proportion of carbohydrate and of protein which it is ever advisable to use in artificial feeding. In breast milk 53 per cent of the calories are furnished in the form of fat, 40 per cent in the form of carbohydrate, and 7 per cent in the form of protein. For most infants it can be said that the protein in the cow's milk mixture should comprise 10 to 20 per cent of the calories, the carbohydrate from 50 to 70 per cent, and the fat from 20 to 40 per cent.

Breast milk is not the best food for the infant under all conditions, though it is the best food under almost all conditions. In the case of infants with severe diarrhoea, in particular in those so emaciated that all superficial fat has been lost, breast milk may add to the diarrhoea and aggravate the condition. Apparently, nature never intended that the infant receiving breast milk should ever reach those serious states of digestive disturbances and malnutrition found in artificially fed infants. It seems necessary to think of breast milk as evolved to keep the infant in a state of health and, therefore, primarily, as a food for healthy infants. It is interesting that all mixtures used in infant feeding, which are imitations of breast milk in respect to the relative proportions of carbohydrate, fat and protein, affect the infant in a manner somewhat similar to breast milk. They are useful only for infants with normal digestions. Healthy infants will thrive extraordinarily well on the butter-flour mixtures, and have the fine state of nutrition and appearance of well-being characteristic of the breast fed infant, and stools resembling those of the breast fed infant. The imitations of breast milk have been successful only to a limited extent; they are entirely lacking in those unknown prophylactic or protective properties which make breast milk in spite of its great potential fermentability, when considered in terms of its fat, sugar and protein, by far the safest and most perfect food for the infant known. In their present state of development, the milk mixtures made in imitation of breast milk must be regarded at best as clumsy imitations and as being perhaps useful but treacherous foods.

Breast milk is a poor repair food. After wasting illnesses infants may not gain for long periods if fed only breast milk, but will gain at once if cow's milk protein is added to the breast milk feedings or mixed feeding begun. The same phenomenon is sometimes observed in pre-

mature infants who fail to gain on breast milk alone, but gain on combinations of breast milk and cow's milk feedings. The reason seems to be that the protein and salts in breast milk are not adequate to meet the abnormal requirement for protein of these abnormal infants.

When one surveys the field of infant feeding, it is evident that almost all, if not all, progress in the art of infant feeding has been empirical. We despise the influence of the grandmother in the feeding of the infant, but have derived many ideas from her and are still under her tutelage. To the present, science has served merely to explain why empiricism moved in this or in that direction or to show that her steps have been taken on solid ground.

DR. BLACKFAN: DISCUSSION OF DR. POWERS' AND PARK'S PAPERS

Dr. Park has covered so many phases of Infant Feeding in this paper that I do not feel in a position to discuss it in its entirety. I should, however, like to emphasize especially one point in regard to the methods which have heretofore been advocated in the feeding of infants.

Most of the information regarding Infant Feeding has been forthcoming from large clinics where severe types of nutritional disturbances are found. The methods advocated, based on the results obtained with such patients, have without much thought been applied to the feeding of infants who come from the homes of the more or less well-to-do families. The problems met within this latter group of patients are entirely different from those which are found in hospitals. This perhaps can be illustrated by the experience at The Children's Hospital during the past year. In the Hospital we have a service which averages fifty to sixty infants under two years of age. In addition to these, there has been developed a Health Center in the Out-Patient Department where there is an enrollment of about seventy-five normal infants, most of whom are artificially fed. Problems of the Hospital as compared to the problems of the Out-Patient Department are very much more difficult, and application of the methods in the Hospital as compared with those in operation in the Out-Patient Department are very different. Another illustration regarding the same line of thought is that of a Canadian pediatrician who fed a large number of hospital children with a butter-flour mixture and at the same time fed the same number of patients in his private practice with the same preparation. It is not at all surprising to find that the children in his practice did very well on this preparation, whereas the children in the hospital did perhaps no better on this, or not as well, as on other preparations. They were two entirely different types of infants.

It really does not matter so very much what

method of feeding is advocated, provided one keeps in mind the individual peculiarities of the patient himself and that the food contains those elements which are necessary for the growth and development of the baby—provided, of course, that the child takes the food well, that it is well digested and easily assimilated. It is, I believe, only by appreciating the individual type of the infant that success in Infant Feeding can be obtained.

Dr. Park has referred to the fact that too much attention has been paid to diarrhea and vomiting. I agree that diarrhea may be the result of an inadequate amount of food and that it disappears when more food is given. However, and this is true of vomiting, another child with diarrhea may be made much worse by continuing or increasing the food. I also do not believe that one should accept any routine as regards the feeding interval of the baby who is vomiting. Here again success is obtained only when the individual peculiarities of the infants are kept in mind.

We are fortunate in having had Dr. Park and Dr. Powers here tonight, and they have left with us many things to think about.

DR. TALBOT: DISCUSSION OF DR. POWERS' AND PARK'S PAPERS

I have been much interested in both of these papers. There are a few points that I would like to ask Dr. Park about. I agree in part with what he said, but I wonder if he meant literally one or two statements that he made.

In the first place he said that human milk was only meant for well babies. In my experience human milk has brought many babies back to health and is therefore valuable for sick babies. If the milk of one Wetnurse will not agree, that of another usually will agree. It is very rare that the milk of all Wetnurses disagrees with a given baby. My feeling based upon studies of basal metabolism is that the instances in which babies have not gained weight on this or that milk mixture or who have not gained on breast milk have been the failure of the pediatrician to appreciate what the caloric needs of a baby are. In my opinion the estimation of the caloric needs per kilo per pound of body weight is not the most accurate method of estimating their needs except in a normal baby. About eight or ten years ago we demonstrated babies that did not gain until they were given more calories per kilo per body weight than was recommended. Great many more calories were given than any one would think was proper for a baby. Based upon basal metabolism determinations of children with malnutrition, it was concluded that the caloric need of a baby is the total between the total caloric requirements of the age and the total requirements of its weight.

A simple working method that we use is a

chart which shows the total caloric need of a baby with actual intake (BOSTON MEDICAL AND SURGICAL JOURNAL 190:1039, June 12, 1924, No. 24). If we follow the curve of a six months baby we see that he should take 800 calories in the day.

DR. SISSON: DISCUSSION OF DR. POWERS' AND
DR. PARK'S PAPERS

I notice Dr. Powers did not refer at any time to the value of salts in the mixtures. It seems to me that would also be an interesting experiment to have made. Some time ago we made a casual study of the sodium chloride content of various mixtures and found that in all ordinary dilutions that were in vogue at two hospitals in Boston that the salt content was practically the same as that of mother's milk. In the whey group and in the protein group there was great increase, oftentimes 150-200%. We did not know, of course, the exact significance of that increase of salts, but it seems to me that should also be considered.

I was especially interested in the various points in Dr. Park's paper. He referred to the feeding of premature infants. It seems to me that premature infants illustrate the extremes that one encounters in the feeding of infants. From our experience at the Boston Lying-In Hospital it was established that breast milk could not be looked upon as the most desirable food for premature infants, but we have not yet found anything which is better. We see a great many infants who do not thrive even on breast milk containing sufficient caloric needs. They will not gain and they will develop, in spite of our giving cod liver oil, so-called rickets. They show craniotabes and rosary. We have given during the first week $1\frac{1}{2}$ teaspoonfuls of cod liver oil daily, during the second week the babies have been given $2\frac{1}{2}$ -3 teaspoonfuls and so on, and although on breast milk have developed rickets. We are giving some babies violet rays. We have used the same method of percentage food for infants that Park has applied. Dr. Park states that the addition of rice flour to breast milk has frequently added much to the gain in weight. We are adding dryco to breast milk and giving it to babies only a few weeks of age, 60-70 calories, and they gain rapidly.

One other point is that the actual demands of premature babies is not as great as Park would give us the impression. If you take the babies at the beginning and give them breast milk, they will gain on 50-60 calories per pound, or 120 per kilo in most instances, never 100 calories per pound as referred to.

DR. MORSE: DISCUSSION OF DR. PARK'S AND DR.
POWERS' PAPERS

Dr. Park made two or three statements which I do not think are quite true. In the first place,

I believe he said that human milk was not essential and that percentage feeding was essential. I think that almost all of the old modifications which we used have been found to contain the proper amount of calories. I do not think we were very much out of the way and I think our babies were not underfed.

Dr. Park brought up a great many points regarding infant feeding as though they were new. I do not think he brought up anything that was new. Most of them were in use several years ago and were dropped and are now being taken up again.

I do not think the younger men appreciate how much of the success of feeding of infants is due to the fact that better milk is obtained now.

I have felt more encouraged during the past few years and what I have heard tonight makes me feel confident that, if Park and Powers and their workers follow this line of thought, they will in another ten years come back to the rational feeding which was practiced ten years previous.

It is impossible to discuss Dr. Park's paper in detail because he took up so many points and covered so much ground. He did, however, make various statements in regard to percentage feeding which I do not think are true. He showed that he did not understand what those who used the so-called percentage feeding meant by it and consequently misrepresented them. I am confident that almost all of the old modifications which we used contained a sufficient number of calories. I do not think that the babies were underfed. Dr. Park brought up a great many points regarding infant feeding as though they were new. In my opinion, he did not bring up anything that was new. Most of the things which he brought up were in use years ago, were dropped and are now being taken up again. It seems to me that the younger men fail to appreciate how much of their success in feeding infants is due to the fact that they have better milk than was obtainable in the past. What I have heard tonight from Drs. Park and Powers encourages me more than anything I have heard for some years, because I feel confident that if they follow the lines on which they are now working they will inevitably come back to the rational methods of feeding which were practiced in Boston ten years ago.

The following officers were elected for the ensuing year:

President, Dr. Kenneth D. Blackfan, Boston; Vice-President, Dr. Henry E. Utter, Providence, R. I.; Secretary and Treasurer, Dr. Joseph Garland, Boston; Member of the Council, Dr. Fritz B. Talbot, Boston.

The meeting was adjourned for light refreshments.

Case Records of the Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN
WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY

RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 11031

MEDICAL DEPARTMENT

A Lithuanian greenhouse tender of forty-two entered October 20. He was not too coöperative and did not understand questions well or make accurate statements.

F. H. Good.

P. H. He had had measles. For years he had urinated twice at night.

Habits. Good.

P. I. Three months before admission he began to have attacks of blindness and dizziness lasting a minute, accompanied by very severe frontal headache which lasted for some time, gradually passing off. At first these attacks were infrequent and occurred usually about eight in the morning, sometimes at night. They gradually became more frequent until for the past two weeks he had had them almost daily. Two months ago he began to be cold and occasionally had a real chill lasting five minutes, not followed by fever or perspiration. This usually occurred in the afternoon. With the onset of this he found he was short of breath on exertion and had some swelling of the feet, ankles and legs, especially the left, at night, usually gone by morning. Two weeks ago he found his weight had fallen from 169 to 140 in two months and a half. The dyspnea and edema increased and he began to have dry hacking cough. Eight days ago he felt so weak and tired that he went to bed and had remained there most of the time.

P. E. A tanned, plethoric looking man with some cough. Moderate pyorrhea. Some carious teeth. Deviation of the nasal septum to the left with partial obstruction. *Heart* moderately enlarged. Apex impulse felt $9\frac{1}{2}$ cm. from midsternum. Percussion measurements as shown in the diagram. Action regular. Sounds of good quality. A systolic thrill at the apex. A blowing systolic murmur heard best at the apex and also to the left of the sternum over the fourth and fifth interspaces. A rough systolic over the aortic area. A blow-



ing diastolic heard best at the aortic area was audible over almost the entire precordia. At the apex there seemed to be a middiastolic murmur. Corrigan pulse. Radials palpable but not hard. Brachials hardened. B. P. 140/5-120/10-160/50. *Lungs.* At the right apex posteriorly fine râles, persisting after cough. Below the angle of the left scapula a few râles. Below the angle of the right scapula a few bubbling râles. *Spine.* Slight scoliosis in dorsolumbar region. *Abdomen, genitals, rectal examination* negative. *Extremities.* Very slight tremor. *Pupils and reflexes* normal. *Fundi.* Fresh retinal hemorrhages, both fundi. Tortuosity of retinal vessels.

T. 99° - 104.8° , with considerable daily swinging most of the time. P. 80-130. R. 15-36. *Urine.* 5 23-62 on the four occasions recorded, sp. gr. 1.010-1.026, the slightest possible trace of albumin at both of two examinations, a questionable trace of bile at one, 1-4 leucocytes at both, 1-2 red blood corpuscles per high power field at the second. *Renal function* 30%. *Blood.* Hgb. 70%, leucocytes 12,000-30,000, polynuclears 84%, reds 3,550,000-4,600,000, moderate variation in size and shape with a tendency to large cells at one examination, and frequent large polychromatophilic cells. *Wassermann* negative. *Stools* negative. *Non-protein nitrogen* 33 mgm. *X-ray.* Heart shadow distinctly enlarged in all dimensions. (See illustration.) Greatest prominence in the region of the right auricle. Supracardiac dullness not increased and shadow of aorta appeared normal. Mottled dullness at both lung roots extending outward nearly across the chest. These changes were more marked in the lower than in the upper chest and apparently did not reach the extreme periphery. The apices were clear. Outline, position and respiratory excursion of the diaphragm normal on both sides. . . . Sinuses large but otherwise negative. . . . Left lower second molar decayed, with a considerable area of absorption at its root tip. Fragment of tooth in the right upper first bicuspid region.

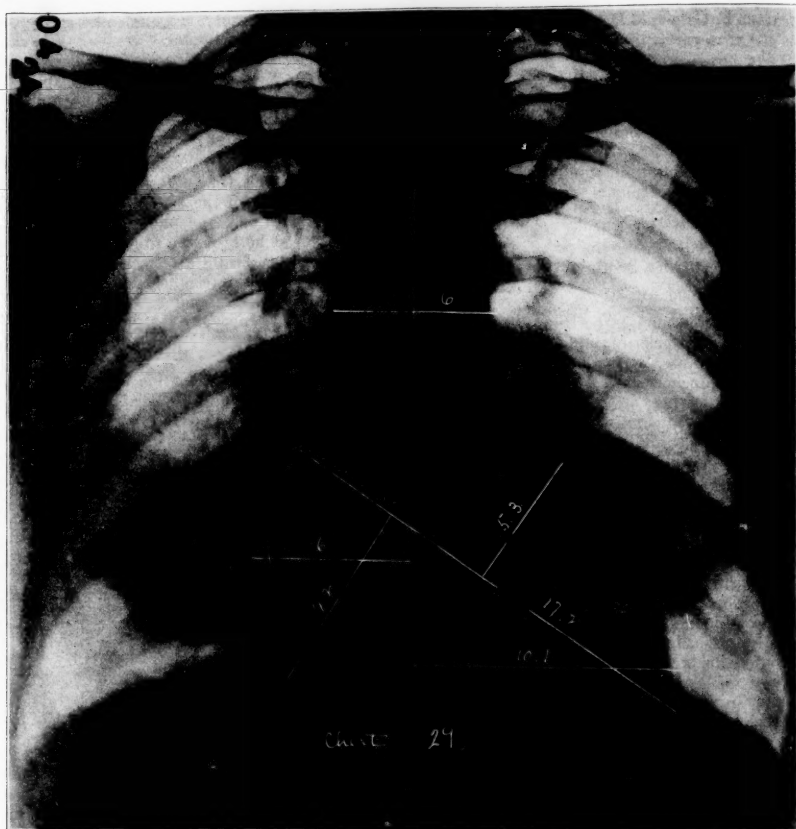
Orders. Soft solid diet. Fluids ad libitum. Morphia gr. $\frac{1}{4}$ s.c. Codeia gr. $\frac{1}{4}$ by mouth. Caffein sodium salicylate gr. x intramuscularly twice at 8:30 p. m. Veronal gr. x at 8 p. m. if restless. October 22. Codeia gr. ss with veronal gr. v by mouth. October 24. Codeia gr. ss by mouth every four hours p.r.n. for restlessness during the night. October 26. Sodium salicylate and sodium bicarbonate gr. xx each every four hours. Morphia gr. $\frac{1}{6}$ s.c. at 8 p. m., repeat once if necessary. October 27. Morphia gr. $\frac{1}{6}$ s.c. Codeia gr. ss by mouth every four hours. October 28. Codeia gr. ss by mouth. October 29. Codeia gr. ss with aspirin gr. v by mouth every four hours p.r.n. November 1. Morphia gr. $\frac{1}{6}$ s.c.

every four hours. Atropin gr. 1/100 s.c. November 2. Morphia gr. 1/6 by mouth, three doses. Alcohol sponges for temperature above 103° every four hours p.m. November 3. Morphia gr. 1/6 by mouth.

The morning after admission the patient showed scattered petechiae over the body and

using an immunized donor a good one to try. We shall obtain Dr. Libman's opinion of this." A blood culture October 21 showed staphylococcus albus; another October 25 showed a non-hemolytic streptococcus in both flasks.

October 26 the patient complained of some bone and muscle pains and dyspnea. He had a



Heart shadow distinctly enlarged in all dimensions. Greatest prominence in the region of the right auricle. Supracardiac dullness not increased and shadow of aorta appears normal. Mottled dullness at both lung roots extending outward nearly across the chest. These changes are more marked in the lower than in the upper chest and apparently do not reach the extreme periphery. The apices are clear.

on the under eyelids and the buccal mucous membrane. Dr. P. D. White said in consultation, "... I do not believe the mitral diastolic murmur is Austin-Flint, although it is possible. ... Fingers not clubbed. I do not feel the spleen. Prognosis bad. No specific therapy. Transfusions I believe may help more than any other therapy. Dr. Lawrence's suggestion of

bad night and went downhill. There was apparently no prospect for transfusion. November 1 he had pain in the left upper quadrant requiring morphia to keep him quiet. Dr. Libman reported that he had had no success in the immunization of friends plus transfusion, so it was not thought advisable to try it. November 3 the patient became unconscious and died.

DISCUSSION

BY DR. RICHARD C. CABOT

NOTES ON THE HISTORY

There is a great deal packed into this history. In the first place these cerebral attacks, which are in no way distinctive, might be uremic, might be from cerebral embolism in connection with a heart lesion, might of course be the beginning of brain tumor or symptoms of a meningitis. But as the history goes on we do not hear of them again and we do hear of some more distinctive symptoms. Apparently there was a period of fever with an afternoon temperature, then shortness of breath, edema, loss of weight, cough, weakness. Cardiac or renal or both are naturally the diseases most in our minds, because they could explain all the brain symptoms and also the later ones.

NOTES ON THE PHYSICAL EXAMINATION

1. "Plethoric" is a poor word and should not be used. It comes down from a time when we used to think that people with high color in the face, a short neck and high shoulders really have more blood in the body than other people. Now we know that they do not, and that the really polycythemic person does not have that appearance. So we ought to say "a red-faced person" if that is what we mean, and it usually is.

2. The total transverse diameter of the heart is distinctly more than half of the inside chest measurement, the best proof we have of cardiac enlargement. So that we start with first-class evidence for a big heart.

3. We have as the most distinctive murmur here a diastolic, apparently of the aortic type, heard best at the base of the heart. There is also a systolic thrill at the apex which seems as if it concerned another valve. The middiastolic at the apex also, if true, would seem to point to the mitral valve, as middiastolies usually are connected with the mitral and not with the aortic.

4. In a man of forty-two, and with these other evidences, Corrigan pulse is distinctly confirmatory of our aortic lesion, and makes it probable that the mitral lesion, if there is any, is not extensive. We get further confirmation of the pulse findings in the blood pressure,—so low a diastolic pressure that it does not make much difference whether we measure it or not. If we have any doubt of the Corrigan pulse, as we often do, it is much better to state the same fact in terms of blood pressure, when we can be exact.

5. "At the right apex râles persisting after cough." That is a very important piece of evidence if true, and if verified in later examinations. We cannot get that from heart disease alone. In ninety-nine cases out of one hun-

dred that means tuberculosis. But if we get this examination correctly there is a space between the base and the apex where there are no râles, and therefore two different processes should be suspected.

6. Of course we can get this condition of the fundi with pure arteriosclerosis, without any kidney trouble, but it is commoner in kidney trouble.

7. On the temperature chart there are a good many readings above 102° and hardly one below 99°. Certainly we have every reason to take that seriously as showing an infectious element in this case. We cannot have merely a mechanical heart lesion. The pulse is not so high as we should think it would be, a good deal of the time above 100, and gradually rising as the respiration does. In our minds there are two chief possibilities, acute endocarditis and tuberculosis.

8. The specific gravity of the urine shows a good swing. If the records are correct this examination should rule out any serious kidney mischief. With such a swing of gravity and with such an output of phthalein we do not care much about the other findings.

9. The report of the blood is not what we should expect. I wish we had been there to see that slide. We should expect achromia and small cells. It seems to show no achromia and big cells. There is nothing in the case to suggest pernicious anemia except that. I think we shall have to throw that out, but that does suggest pernicious anemia.

10. The non-protein nitrogen is normal.

11. By X-ray they are trying to rule out syphilitic aortitis, ruling out aneurism anyway.

12. The X-ray report means that they do not think it is tuberculosis. "More marked below than above, more marked inside than out"—that means non-tuberculous ordinarily. The X-ray examination is important as showing a big heart and negative for tuberculosis.

13. The orders are mostly for the relief of pain. I do not see a digitalis order in the whole list, which shows that they thought the heart was doing its work.

14. The note of petechiae links up with one of the two things we have been thinking of. The diastolic murmur and the systolic thrill at the apex made us think of acute endocarditis, and these petechiae confirm that.

15. Dr. White thought there were two lesions, mitral as well as aortic. There have been a few cases in which when we have had an acute endocarditis and could cultivate an organism from the blood we have put that organism into the blood of a relative (of course with the relative's consent), obtained immunity, and then have put the relative's serum back again into the patient. In a disease like this where we have no other hope I think it should be

tried, because there are a few apparently favorable cases on record.

16. With the staphylococcus albus of course we are always afraid of contamination. Streptococcus is more likely to be the real thing. The viridans is non-hemolytic, and that is the commonest in this disease.

Dr. Libman of New York has reported more cases of this type of disease than anybody else. Naturally his opinion would carry great weight.

DIFFERENTIAL DIAGNOSIS

I do not see why we should make any other diagnosis than acute or subacute endocarditis. It is fashionable to say "bacterial endocarditis," but that is an unnecessary word in my opinion, because all endocarditis is bacterial. That will account for everything in the case so far as I see, for his fever, for his mechanical heart symptoms, for the culture, for the anemia, and with a little stretching will account for the blindness and dizziness, which might be due to anemia or to minute cerebral emboli. It is queer that these symptoms should be separated by such an interval from the petechiae, and I do not feel confident that that is the real solution.

That means that Dr. Richardson should describe upon the aortic or mitral or both valves—I think probably both just from statistical considerations—a chronic and acute endocarditis. Almost never is the endocarditis purely acute. Generally there is a stiff hard base with the acute process on top. Probably there will be some stenosis of each valve, aortic and mitral. There is undoubtedly enlargement of the heart. Outside of that there should be nothing except the effects of passive congestion and of embolism. The chance of infarcts is good. We have had nothing to tell us where. Kidneys, spleen, lungs, are the commonest places. They may well be there and in the liver too.

I think the X-ray excludes tuberculosis, and we have another explanation of the fever. I believe those râles at the right apex were found by a man who thought it was tuberculosis on account of the fever and so was looking extra hard for confirmation. I think of nothing else.

A PHYSICIAN: Is the aortic insufficiency produced by the chronic endocarditis?

DR. CABOT: Yes.

A PHYSICIAN: Does this explain the eye-grounds?

DR. CABOT: Yes. That is, one gets hemorrhages in acute endocarditis in all sorts of places. I think he probably has some arteriosclerosis also, but I do not think that is the real reason he had hemorrhages.

A PHYSICIAN: In what per cent. of cases do you get petechiae?

DR. CABOT: I cannot give you that exactly, but I should say less than half.

A PHYSICIAN: Does the type of bacteria influence that?

DR. CABOT: I think not. The streptococcus is the commonest organism, and I have seen it a great many times with and without petechiae. I suppose it depends how tough the bits of vegetation are whether they are easily washed off or not. I do not suppose he spit. Ordinarily if there is any sputum we get a record of it. Blood is what we should be looking for here as evidence of infarction.

A PHYSICIAN: Do infarcts sometimes form abscesses?

DR. CABOT: Yes, in the lungs, and sometimes in the spleen or kidney. I should not say often, but in three or four per cent. of cases. We are not dealing with the pyogenes but with the viridans, which is ordinarily a very mild organism. It takes about a pint of bouillon culture to kill a rabbit with that. It is very mildly virulent in animals, and human beings often last a year or two. So we are not surprised that it does not form abscesses. It is not a pus-forming organism.

A PHYSICIAN: Do the petechiae signify malignancy?

DR. CABOT: I do not distinguish any particular type of endocarditis as malignant. If we have an acute endocarditis in an adult it is always in one sense malignant, that is always likely to be fatal, and it is just as likely, so far as we know, without petechiae as with them. But I think petechiae usually mean that we are not far from death, that the prognosis is pretty short.

DR. HOLMES: This plate is a seven-foot plate taken to show the actual size of the heart. It is taken during respiration, so that the lung fields are more or less blurred. The heart shadow is distinctly increased in size and the increase is a rather general one, if anything possibly a little predominance in the left side. There is also a moderate increase in supracardiac dullness, the aortic shadow a little prominent to the right. The knob of the aorta is not particularly prominent; that is, this is not the type of supracardiac enlargement that we expect to see with arteriosclerosis. It is more the type that we see with high blood pressure or luetic aortitis.

DR. CABOT: Do you think this man has luetic aortitis?

DR. HOLMES: I am not ready to say that. I have some interesting data on that. I have been going over the cases and I have found thirty-one cases which came to necropsy and were found to be luetic aortitis. They cover a period of about seven years. Out of that thirty-one, fourteen had X-rays taken. Of these one had a heart examination; the others were ordinary plates of the chest which did not

give very definite information. The diagnosis according to the clinical records was right in seventeen and wrong in fourteen. Of those that had X-rays the diagnosis was right in nine and wrong in five. So that there was a little higher percentage of correct diagnoses in cases with X-rays than those that had not, but not very convincing. Then I went over a lot of material in the House. There are some things in the X-rays very constant. It is unwise to attempt to make a diagnosis from X-ray alone, but I do believe that if we add that to the clinical data we shall make more correct diagnoses.

The increase in supracardiac dullness is significant. If we know the age of the patient, that he has a high blood pressure or a positive Wassermann, then we can make a pretty positive statement. I think we can be of a good deal of help in differentiating between aortic disease of rheumatic or luetic origin, but we cannot do it by X-ray alone.

DR. CABOT: I have said that this is not luetic.

DR. HOLMES: I do not think that we should attempt to attack that position. We should not try to put the X-ray diagnosis against the clinical diagnosis. We can only use it as an aid. I think that this heart is definitely enlarged. I think it also shows evidence of myocardial weakness. That is, this is not a merely hypertrophied heart. He also has dilatation of the auricles, which would go with myocardial weakness. In addition he has a good deal of change in the lungs, extensive mottling extending upward and outward on either side. Such a condition can be interpreted as passive congestion of cardiac origin. I should think it might be in this case. So that we should be justified in saying from the X-ray, I think, that the aortic shadow is increased and that there is probably some actual dilatation of the aorta, that the heart is increased and flabby, and that there is broken compensation. Whether this is of rheumatic or syphilitic origin I should not be able to say without more of the history. If I were obliged to say from the X-ray alone I should say syphilis, because I have more evidence of that than of the other.

DR. CABOT: Has he an adherent pericardium?

DR. HOLMES: We have no evidence of it. Adherent pericardium would not show in the X-ray plate. I should have to have a fluoroscopic examination. Again this is only a small part of the examination.

A PHYSICIAN: Wouldn't you expect a positive Wassermann in luetic aortitis?

DR. CABOT: Yes. We get it in about eighty per cent.

A PHYSICIAN: Would you have given him digitalis?

DR. CABOT: No, I should not. I think you were quite right not to.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Multiple emboli.
Malignant endocarditis.

DR. RICHARD C. CABOT'S DIAGNOSIS

Acute and chronic endocarditis of the aortic and mitral valves. (Stenosis?)
Hypertrophy and dilatation of the heart.
Probably infarcts.
Chronic passive congestion.
Streptococcus septicemia.

ANATOMICAL DIAGNOSIS

1. Primary fatal lesions

Septicemia, streptococcus viridans.
Slight chronic endocarditis of the mitral and aortic valves.
Massive acute endocarditis of the mitral and aortic valves with ulceration of an aortic cusp.

2. Secondary or terminal lesions

Infarcts of spleen and kidneys.
Hypertrophy and dilatation of the heart.
Chronic passive congestion.
Beginning hydropericardium, hydrothorax and ascites.

3. Historical landmarks

Chronic pleuritis, right.

DR. RICHARDSON: We were not permitted to examine the head.

The gastro-intestinal tract was negative except for some reddening of the mucosa, passive congestion. The diaphragm on the right was at the fourth interspace, on the left at the fifth interspace.

In the right pleural cavity 200 c.c. of thin fluid and about the same amount on the left, beginning hydrothorax. There were a few scattered pleural adhesions on the right.

The trachea and bronchi contained much brownish-red frothy fluid. The bronchial glands showed the condition we find in chronic passive congestion, very little enlarged, brown red and juicy, otherwise negative.

The pericardium contained a small amount of thin pale clear fluid, the beginnings of hydropericardium. The heart weighed 560 grams. That is considerably enlarged. The myocardium on the right measured four mm., on the left twelve, a little thick. The columnae carneae were well marked. The cavities showed slight dilatation on the left, considerable dilatation on the right. The tricuspid and pulmonary valves were negative, but the mitral and aortic showed very marked lesions. The left coronary was negative. At a point just above the right coronary opening there was a small thrombotic mass in the wall of the aorta.

Scattered all over the aortic cusps there were smaller and larger masses of vegetation, in the central portion of one cusp diffusely involved by large masses of vegetation there was a small hole,—ulcerated endocarditis. Beneath this rather massive endocarditis, which is acute in type, there was some fibrous thickening; in other words a slight chronic endocarditis underlying the acute. The posterior cusp of the mitral valve was negative. The anterior cusp was covered with massive vegetations, the largest 3.5 by 2.5 cm., and underneath these slight fibrosis. When these valves were shut together of course these masses obstructed the opening, at least to some extent.

The sections from the acute vegetations were loaded with streptococci in slender chains. The aorta and great branches were frankly negative. The mass above the opening of the right coronary overhung it to some extent but did not occlude it. The coronaries were otherwise negative.

DR. HOLMES: These measurements are made after the blood pressure is removed, and we see them during the time of hypertension.

DR. RICHARDSON: The pulmonary artery, veins, venae cavae, portal vein, and radicles were negative. The liver was rather large, 2260 grams. (Normally 1200-2400.) The tissue showed some chronic passive congestion. The spleen weighed 400 grams, moderately enlarged. There were several infarcts. The tissue itself was rather mushy, that is, a soft hyperplastic spleen with infarcts. The kidneys combined weighed 400 grams—large, but showed no glomerulonephritis. In each kidney were several infarcts, some of them rather large.

From the heart blood the culture showed a streptococcus growing in long slender chains with but little if any hemolysis, the so-called viridans. The peritoneal cavity showed beginning ascites.

A PHYSICIAN: Did the condition of the aortic valve seem to be such as definitely to prevent closure of the aortic opening?

DR. RICHARDSON: I can only refer again to the large masses of vegetation. When the valves were closed these were still there and must have obstructed the valves to some extent.

A PHYSICIAN: Did they seem to be consistent with the Corrigan pulse?

DR. CABOT: Yes; I do not see why not. They do not let the valve open or close either. With that sort of lesion we generally get these physical findings during life. Of course we cannot hold a heart at necropsy so as to try the water test. Nobody does that now. We have to infer from what we see as to whether it would have closed or not.

A PHYSICIAN: Assuming that digitalis does

increase the rest period of the heart why not give it?

DR. CABOT: Because I think the patient was dying of sepsis primarily and not of stasis.

CASE 11032

NEUROLOGICAL DEPARTMENT

An Irish motorman of thirty entered April 1 complaining of sleeplessness and headache.

F. H. Good, except that his wife had had one miscarriage. Two children were living and well.

Habits. Good.

P. H. He had measles, whooping cough and scarlet fever as a child, pleurisy at twenty-six, influenza in 1918 and 1919. His bowels were always constipated, moving once in two days. Seven years before admission he weighed 195 pounds, his best weight. He thought his present weight was 170.

P. I. Three weeks before admission he had a gastrointestinal upset with gaseous eructations and constipation. Although he lacked energy and grew progressively weaker he continued to work for a week. Then he had to give up and go to bed because of dizziness. For the following week he was extremely drowsy and was unable to keep awake. After a week of drowsiness he had difficulty in going to sleep, though he felt he would like to. He thought this was due to intense occipital headache, which had not left him since that time. For the past week he had had very little appetite and felt that he was growing worse, as his headaches were more troublesome, his inability to sleep though drowsy made him feel weak, and he had felt feverish. Since the onset of the illness his bowels had been more constipated than usual and he thought he had lost weight. He denied any of the symptoms or manifestations of syphilis, or exposure to it. He had not seen double or had any difficulty in raising his lids, any paralysis, disturbance of sensation or nausea.

His physician gave the following additional history. March 25, after feeling below par for three weeks, the patient was dull and drowsy and slept most of the time, though he said he was wakeful because of pain which ran from the right mastoid to the shoulder and occiput. March 29 the temperature was 101.6°, the pulse 76. No redness, swelling or tenderness around mastoid or neck. Ears negative. Pupils reacted sluggishly. A little internal strabismus at times. No abnormal reflexes found. March 31 T. 99.6°, P. 66. They had remained about that to April 1. He continued to sleep most of the time. April 1 the pain had gone to the back of the head; no pain in shoulder and little in the mastoid. Speech slow. Reflexes delayed. Neck a little stiff and sore.

P. E. A well nourished man, asleep, aroused with some difficulty and remaining very drowsy, with a tendency to drop asleep if not stimulated. He answered questions with surprising quickness considering his condition, though he did not speak at length or spontaneously. Left eyelid drooped a little. Left side of the face had a smoothed-out appearance. Skin showed a marked urticarial tendency. Sclerae slightly injected. Very moderate pyorrhea. Reddening and injection of fauces and soft palate in region of uvula. Tongue, furry white coat. On extension not in midline; slight fibrillary movements of parts. Heart. Apex impulse not found. First sound had a very slight metallic quality and a suggestion of snappiness. A₂ loud and ringing, with some accentuation. Lungs not recorded. Abdomen, genitals and extremities normal. Pupils. Slight internal strabismus of the left eye, which looked a little upward. Right pupil slightly irregular. Both reacted to light and distance. Fundi quite silvery, but showed no definite abnormalities. Reflexes normal except that abdominal reflexes were absent.

T. until April 11 100°-101.9°, afterwards 99.1°-100.5°, with one drop to 97.1° April 17. P. 60-104. R. not remarkable. Urine. 3 17-80, sp. gr. 1.026-1.022, cloudy at one of three examinations, no albumin or sugar. Blood. Hgb. 90%, leucocytes 4,200-8,200, polynuclears 78%-68%, reds normal. Two blood Wassermanns negative. Non-protein nitrogen 38 mgm. Stools negative. Widal and blood culture negative. Urine and feces cultures negative for typhoid. Lumbar puncture April 1. 12 c.c., clear colorless. Initial pressure 150, after withdrawal of 6 c.c. 110, after withdrawal of 6 c.c. more 90. Jugular compression, pulse and respiration normal. Cells, 39 mononuclears. Wassermann negative. Alcohol slightly positive. Goldsol 0000000000. Total protein 67. Ammonium sulphate a slight trace. Sugar .0689. April 9. 12 c.c. clear colorless. Initial pressure 110, after withdrawal of 5 c.c. 80, after withdrawal of 7 c.c. more 70. Hydrodynamics normal. 12 cells, lymphocytes. Alcohol and ammonium sulphate negative. Total protein 58. Goldsol 0000000000. Sugar .08. X-ray. Inner table of skull showed unusually deep tortuous vascular grooves on both sides, most marked on the right, suggesting interference with circulation by intracranial tumor. No other definite evidence of cranial pathology. Heart not enlarged. Heart and chest showed no definite abnormality.

Orders. April 4. Soft solids. Force fluids. Individual precautions. April 10. Digitalis gr. iss 2 i.d.

April 3 the physical findings were as before with the addition of a lower right external rectus palsy. April 7 the patient was mentally much clearer and read a newspaper, and in spite

of his fixed expression and monotonous speech carried on a fairly active conversation. He continued to improve and by the 15th was easily roused and able to take care of himself, though he was still very somnolent and mentally confused. He had certain suggestions of delusional trends. There was slight general muscular rigidity with a mask-like facial expression. During the last week in the hospital his condition was stationary. At the time of discharge April 24 there was a suggestion of Parkinsonian syndrome. He was discharged with recommendations for absolute bed rest, high caloric diet and forced fluids for a month, or as much longer as his physician thought necessary.

Notes from the Out-Patient Department record. February 4, ten months after discharge. Complaint, pain in the back of the neck over an area the size of a half dollar. Expression mask-like. Stiffness of the extremities. Reflexes normal. Orders, sodium salicylate. February 18. Tincture of hyosein drops x t.i.d.

History of interval. The patient grew worse, and spent the month of March in bed. The right arm and leg became paretic. He was visited by Dr. Taylor and given scopolamin hydrobromid.

Notes from the Out-Patient Department record. October 21 the arm and leg had improved, especially the leg. Parkinson's facies and gait. Arms not in typical postures. Tremor slight. Head flexed to the left. Right knee-jerk greater than left. Arms and ankle reflexes about equal. October 28. Electrical treatment.

DISCUSSION

BY DR. E. W. TAYLOR

The important points in the history up to the time of discharge are the initial temperature; the tendency to drowsiness or to wakefulness, both of which occurred, drowsiness being rather more frequent; slight disturbance of certain cranial nerves, e. g. strabismus; continued drowsiness with tendency toward improvement; and at the end of a month the development of the rigidity characteristic of what is commonly known as the Parkinsonian syndrome.

I saw the patient outside the hospital on April 17, a year later. He then presented a most pitiful appearance, one of the most extreme Parkinsonian conditions that I have seen. He was extremely rigid, but was able to make certain movements very slowly. He was unable to feed himself. His right arm was practically "dead," as he expressed it. If the arm were under a blanket, for example, he could not lift the blanket to free the arm. He had a strong tendency to drool due to rigidity of the facial muscles. It was an apparently hopeless situation.

I gave him at that time scopolamin hydrobromid in doses of one-hundredth of a grain three

times a day by mouth, rather too large a dose to begin with under ordinary circumstances. The dose was later reduced to about half that amount. In three to four weeks from being absolutely rigid, practically unable to move, drooling, unable to feed himself, he came in alone to my office by the street cars and appeared as you will see him in a few minutes,—a very marked improvements, no drooling whatever, rigidity persisting in a measure, but quite capable of taking care of himself in all respects, although he has not been able to go back to work.

That is the story; there is no difficulty in the diagnosis. That combination of disturbances, strabismus, rigidity, drowsiness, constitutes a syndrome which we do not see in any other condition so far as I am aware. The interest of the condition lies essentially in its relationship to so-called paralysis agitans, very closely resembling it in its essential features and yet having some minor differences, notably that it occurs in the young, and certain differences in the respect that there is much less tremor as a rule in the postencephalitic Parkinsonian condition than there is in paralysis agitans.

You may care to see this man. You can see that he is far from well, and that he walks still with a Parkinsonian type of gait, etc. There are several things I should like to point out. You notice that when I asked him to take off his coat he made the necessary movements with a great deal of rapidity. Dr. Hugo Mella has drawn attention to the fact that in the postencephalitic type of Parkinsonian disease the power to make voluntary movements is retained in a very much greater degree than in ordinary paralysis agitans. On the other hand when the position is fixed it remains just as fixed as in paralysis agitans. The tremor is much less conspicuous than the rigidity in most of these cases. Has the tremor bothered you very much?

PATIENT: It is worse in the morning.

DR. TAYLOR: When you get up?

PATIENT: Yes.

DR. TAYLOR: There is rigidity of the neck and rigidity of the face, but no drooling at all. Do you consider yourself very much better?

PATIENT: Much better.

DR. TAYLOR: What could you do?

PATIENT: I couldn't move at all, couldn't feed myself.

DR. TAYLOR: You could walk a little then?

PATIENT: Very little.

DR. TAYLOR: You see I haven't exaggerated the condition.

DR. CABOT: Is that hand and arm position explained in any way? Why is that position ordinarily seen?

DR. TAYLOR: I do not know, except that it is rather a natural position to fall into. The characteristic of all this disturbance is a failure of

associated movement. In paralysis agitans the associated movement of the arms is lost. (Patient walked across the room.) Notice that his arms remain rigid practically, the left showing a little movement.

PATIENT: I can move the left now.

DR. TAYLOR: One of the most important advances in cerebral localization of the last twenty years has been a study of the functions of the lenticular nucleus and the basal ganglia in general. There is no doubt that the lesion of paralysis agitans, as of other disorders of motion, such as chorea, the dystonias, etc., has its seat in this region of the brain. In general, the lenticular nucleus must be regarded as the seat of associated movement. The pathological changes in cases of encephalitis are in some respects similar to those of poliomyelitis, but differently distributed. There is in the former condition much less tendency to the destruction of nerve cells.

The lesion is destructive to a certain degree, but far less so than is seen in poliomyelitis. The paralyzes, especially of cranial nerves, so frequent in the early stages, almost invariably recover, whereas certain secondary changes, the most conspicuous of which is this paralysis agitans type, have a peculiar tendency to develop and persist, constituting one of the most serious features of the disorder. The prognosis as yet we do not know. Improvement is unquestionable, and it is to be hoped that these patients will at least hold their own. The patient before us is not able to work. He was a motorman, and of course that sort of work would be peculiarly difficult for one in this condition. His mind, however, is perfectly clear, and he is physically strong. There should be some employment found which he could successfully perform.

What reason do you give for not working?

PATIENT: Sometimes I cannot move my arm.

DR. TAYLOR: That of course is what very often happens in paralysis agitans, as in this condition. The rigid cases do very much better with scopolamin than the tremulous ones.

DR. CABOT: Are most of your postencephalitics rigid?

DR. TAYLOR: It is a common sequela. I do not mean that most of them are rigid, but if they have any sequela it is apt to be of this type.

DR. CABOT: As we read post-mortems of encephalitis we do not hear much about its localization in the lenticular nuclei. The lesions sound very slight and very diffuse.

DR. TAYLOR: I think that is partly from the fact that most post-mortem examinations neglect the lenticular nucleus.

DIAGNOSIS

Encephalitis lethargica.
Paralysis agitans.

CASE 11033

SURGICAL DEPARTMENT

A boy baby thirty-six hours old entered November 15.

F. H. and P. H. Not obtained.

P. I. Nothing abnormal about the baby was noticed at birth. The evening of the second day its bowels had not moved. Castor oil was given without relief. The morning of admission on the attempt to give an enema it was found that the anus was imperforate.

P. E. A healthy looking infant, apparently normal except for maldevelopment of the fontanel and absence of anal opening.

Pre-operative chart not recorded.

Operation was done November 15. Next day the pulse rose to 173, the temperature to 100.5°. On the 17th the temperature was 102.8°, the respiration 96, the pulse 154. The difficulties in feeding led to a suspicion that there might be stenosis of the esophagus. Attempts to pass catheters and bougies were unsuccessful. On the 19th the temperature fell to 96.8°, the pulse to 125, the respiration to 45. November 20 the child died.

DISCUSSION

BY DR. EDWARD L. YOUNG, JR.

It is not uncommon, of course, not to notice an imperforate anus, because the dimple in the skin may well be there. The anal opening is an ingrowth from the skin and should meet and unite with the rectum long before birth. I think figures tell us that imperforate anus occurs in every eight or ten thousand births. Of course it varies in degree. Occasionally several days may go over without its being noticed, because there are no bacteria in the intestines at birth, consequently behind the obstruction there is no distension.

Any child with maldevelopment in one place may have maldevelopment in another, and it is a child with lowered vitality. The mortality of the condition is very high, approximately fifty per cent. The only thing to do of course is first to try to establish an opening below. If there is merely a fibrous membrane between the lower end of the rectum and the upper end of the anus the outlook is better than if there is a complete absence of any attempt at anal development. The only thing to do is to try to communicate with the lower end of the gut by making an incision in the perineum well back toward the coccyx and with blunt dissection see if we cannot meet a full pouch, which would be the lower end of the rectum. Of course the further we get away from the skin the poorer the chance is of making an opening

that is of more than transient value, and if we do not meet the gut within a reasonable distance—two inches say—the only thing to do is to go into the abdomen and make a colostomy through for temporary relief. I assume that that is what was done here. Whether or not they found it below we cannot tell, because we cannot tell from the skin how far away the rectum is.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Imperforate anus.

PRE-OPERATIVE DIAGNOSIS

Imperforate anus.

OPERATION

Under novocain infiltration an incision was made in the midline of the perineum and with careful retraction blunt dissection was carried upward about an inch and a half between the coccyx and prostate. The rectum was identified by needling and dissected free from the adjacent structures by blunt dissection with the idea of drawing it down. It was opened in the course of this procedure. The walls were brought down under considerable tension and sutured to the skin edges of the incision.

FURTHER DISCUSSION

When the rectum is as far away as that the situation is very unsatisfactory, and even if the child lives the prognosis is pretty poor.

The question about the esophagus was raised two days after the child came in. To the surgical mind it shows the difficulties in child feeding that it took two days eventually to guess as to whether or not anything was getting down anywhere. "Castor oil was given without relief," whether before the child came in or not I do not know. There was no suggestion then that the castor oil did not reach the stomach. Apparently this is one of the cases where the development of the child is defective in more than one place. I do not know that we have any right to venture a guess as to what the defect may be.

So I shall be prepared to have Dr. Richardson say that the lower end of the esophagus is absent or is opening into anything, and he may tell us that there are various and sundry other maldevelopments. I do not see that there is anything more to say, except that the child did what it could not help doing.

DR. CABOT: You said that this operation for imperforate anus had a mortality of fifty per cent. Can you personally remember any case that got well?

DR. YOUNG: No, I cannot. But my experience has been very limited. I have seen, I think, only one other case here, and that died.

DR. CABOT: I can remember a good many

through the years that I have been connected with this hospital. I never knew a case to get well.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Imperforate anus.
Imperforate esophagus?

DR. EDWARD L. YOUNG'S DIAGNOSIS

Malformation of esophagus.
Imperforate anus.

ANATOMICAL DIAGNOSIS

1. Primary fatal lesion

Malformation of the esophagus.
Imperforate anus made patent by operation.

2. Secondary or terminal lesions

Focal pneumonia.

3. Historical landmarks

Slightly defective closure of the foramen ovale.
Patent ductus arteriosus.

DR. RICHARDSON: We were not permitted to examine the head.

The esophagus extended up from the stomach in the usual way, but at a point a little below the bifurcation of the trachea it passed into the trachea. From the pharynx the upper part of the tube came down and stopped a short distance above the bifurcation. There was no connection between the two portions. There was considerable sticky, viscid, somewhat mucopurulent material in the trachea and bronchi, and a few areas of focal pneumonia.

The rectum was patent at necropsy, but in the immediate region the tissues were infiltrated with blood. Otherwise the intestine was negative except that it was empty, as was the stomach.

The heart and other organs were out of the picture, except for slightly defective closure of the foramen ovale and a patent ductus arteriosus.

DR. CABOT: Did you find any oil in the upper pouch?

DR. RICHARDSON: No.

FOLLOWING the recent resignation of Dr. Henry Page, a committee has been appointed by the board of directors of the University of Cincinnati to administer the work of the college of medicine. The members are: Dr. Arthur C. Bachmeyer, superintendent, Cincinnati General Hospital; Dr. Alfred Friedlander and Dr. Nathan C. Foot. Dr. Bachmeyer, as chairman of the committee, will be the acting dean.—*Science*.

CURRENT LITERATURE

ABSTRACTORS

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SYPHILITIC ARTHRITIS WITH EOSINOPHILIA—RECOVERY OF T. PALLIDUM FROM THE SYNOVIAL FLUID

CHESNEY, KEMP and RESNIK (*Johns Hopkins Hospital Bulletin*, August, 1924) report two cases of syphilis showing an unusual clinical syndrome, from one of whom the *T. pallidum* was recovered from the synovial fluid. They conclude as follows:

1. The presence of syphilitic infection in the human being may result in a reaction expressed by the following clinical syndrome: (a) enlarged, tender lymph nodes, (b) eosinophilia, (c) subacute polyarthritis.
2. The treponema pallidum may be recovered from the joint fluid of patients presenting the foregoing reaction to the infection.

A CASE OF POLYCYTHAEMIA VERA WITH SPECIAL REFERENCE TO THE FAMILIAL FEATURES AND TREATMENT WITH PHENYLHYDRAZINE

OWEN, T. (*Johns Hopkins Hospital Bulletin*, August, 1924), reports on a case of polycythaemia which he summarizes as follows:

1. A case of polycythaemia vera, with neurological symptoms, is described and certain minor physical findings pointed out.
2. The disease is a familial one and every case should be investigated from this point of view. There may be other familial defects present also.
3. Treatment with phenylhydrazine hydrochloride by mouth has been very encouraging so far and seems to hold out hopeful prospects for keeping the disease in check. No unpleasant symptoms from the drug were noticed, although a slight phlebitis and a transient haematuria of minimal proportions occurred.

[J. B. H.]

TRUE BILATERAL HERMAPHRODISM WITH PERIODIC HEMATURIA

BURDEN, VERNE J. (*Journal of Urology*, August, 1924).

A patient, aged 40 years, apparently a male, had spontaneous hemorrhage of three to four days' duration, recurring at four to five weeks' intervals beginning at the age of 30. He lived the ordinary life of a man, was a well developed adult of the feminine type in delicacy of skin, contour of body, full development of mammary glands and distribution of pubic hair. The penis and scrotum were normal; there were no testicles. Rectal examination revealed the absence of prostate and seminal vesicles. Laparotomy revealed congenital absence of the right kidney, no prostate. The structures removed were: Uterus, tubes, ovaries, testicles, epididymis and appendix. This was an instance of true hermaphrodisism of the bilateral type, there being proof of the functional activity of the two different genital glands.

[B. D. W.]

THE BOSTON Medical and Surgical Journal

Established in 1828

Published by The Massachusetts Medical Society under the jurisdiction of the following-named committee:

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SUBSCRIPTION TERMS: \$5.00 per year 4. advance, postage paid for the United States; \$7.50 per year for all foreign countries belonging to the Postal Union.

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the Journal office, 126 Massachusetts Ave.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The Boston Medical and Surgical Journal, 126 Massachusetts Ave., Bos' n, Mass.

PUBLICITY PREVIOUS TO THE COUNCIL MEETINGS

UNDER the constitution and by-laws of the Massachusetts Medical Society most of its affairs are controlled by the Council. As an entertainment the proceedings are attractive because the committees submit reports and recommendations, thereby presenting the results of the study of given problems. The large attendance of councillors demonstrates loyalty to the Society and readiness to perform their duties. It may be that the opportunity for social intercourse after the completion of business has attractions which influence attendance to some extent. After the close of the business session informal discussions of votes passed sometimes indicate that some question relating to a given problem has existed in the minds of members, but most people hesitate to precipitate discussion unless well prepared to express definite opinions, and the time for consideration of any recommendation or motion during the meeting is so short that modesty often inhibits action. There is a definite opinion that if a synopsis of committee reports and recommendations could be published in advance of the council meeting more interest would be shown by the members. The advantage of opinions formed after due consideration is obvious.

We are aware of the inherent difficulties which would be met if the Council should require publicity relating to reports in advance of the meeting, for committees often have to postpone definite action until a short time in advance of submitting reports in order to have all facts pertaining to the subject in hand, but we are confident that greater interest would be shown and time devoted to a subject would be saved if the substance of reports could be published before the meetings. Deliberative bodies often ask for postponement of action in order to give opportunity for more complete consideration, because of the difficulty of making decisions relating to a new or complicated proposition.

A case in point relates to the forthcoming report of the committee appointed to consider the matter of establishing headquarters for the Massachusetts Medical Society. During sessions of this committee and study by the Chairman, Dr. J. S. Stone, it has developed that the problem presents many interesting possibilities and also that it is not free from complications. The reason for the appointment of this committee is because it is believed that the president should have a centrally located office where he can meet committees or have impromptu conferences as occasion may demand and some committees have found that the work required of them is not compatible with the routine of a private office. The secretary of the Committee on State and National Legislation, for example, has great demands on his time and energy and must act promptly in emergencies. It is asking too much of a busy practitioner to turn his office into a meeting place for conferences or to assign emergency work to his private secretary. He especially needs to have the resources of office room and stenographic service. These illustrations are only a few of the obvious demands for especial conveniences. The Society has grown to the extent where centralization of many of its activities is demanded.

If the committee intends to make definite recommendations, a statement in advance of the council meeting would be of unusual interest.

The JOURNAL is at the disposal of all committees which would like to send out advance information.

THE LIFE EXTENSION INSTITUTE IN BOSTON

THE JOURNAL publishes today an account of a meeting of those interested in launching the Boston Branch of the Life Extension Institute which has just been opened with Dr. Lesley H. Spooner as Medical Director.

In this account Dr. Fisk sets forth the case for the Institute and there is also a criticism of

its work presented by a group of prominent and able Boston physicians.

We believe that many of the criticisms offered are justified. Some are easily remedied. Some are subject to compromise. Some are regarded as unsound by the Officers of the Institute when the aim and scope of their work is considered.

We are totally unable to believe that any other than the highest motives actuated those public spirited citizens who devoted their energies and their money to the establishment of the Institute.

We believe it has been a useful agent for the betterment of health. It is unfortunate that our medical schools have not taken any leadership in the work the Institute is doing. The words of Sir James MacKenzie have aroused little response in medical faculties.

Schools of Public Health are useful but they are being established at a time when the communicable diseases are being conquered. What is being done to teach the medical students of today regarding the causes and the prevention of the increasing degenerative diseases? How large a part in the campaign against cancer is taken by our medical schools and how large a part by other organizations?

We believe that there is a place for the Institute, that it will not harm the practitioner of medicine, that the public will recognize that the family physician is the one to guide the health of his families as well as to care for them in sickness and we are confident that medical faculties must revise their curricula to meet new conditions.

THE DOCTOR'S RESPONSIBILITY FOR INADEQUATE FIRE PROTECTION IN HOSPITALS

The fire disaster at the Scobey Hospital, 906-8 Beacon Street, Boston, on January 4th, with the fatal burning of one patient, should make every physician ponder on his individual responsibility in sending a patient to a private hospital which is not adequately guarded by construction against fire dangers and which has not outside unburnable fire escapes of the stair-step variety down which bed-ridden patients may be carried with reasonable ease and entire safety. In this particular instance no such fire escapes were present and the rapidity of the spread of the fire gave horrible testimony to the lack of construction with a material and an arrangement in any way adapted to resist the rapid spread of fire.

The physician may claim that the fire dangers of a private hospital are matters to be cared for by state or municipal ordinances. All would agree that proper laws should exist but in this case it is evident that either the laws were inadequate or adequate laws, though existent, were not enforced. The physician's responsibility goes deeper than ordinances, for

private hospitals can only exist if physicians send patients to them. Any private hospital, inadequately protected against fire, must either make provision for such protection or close up the moment physicians decline to send them patients on the basis of being unwilling to expose their patients to bad fire risks. So, in last analysis, the physicians are responsible for any conditions existing in private hospitals, including undue fire hazards.

MISCELLANY

MEETING OF THE BOSTON ADVISORY COUNCIL OF THE LIFE EXTENSION INSTITUTE

BEFORE the opening of the Boston Branch of the Life Extension Institute a meeting was held of the Boston Advisory Council of the organization. There were present Dr. Eugene Lyman Fisk, the Medical Director of the Institute, Mr. Henry Copley Greene, the Manager of the Boston office, Dr. Wade Wright of the Metropolitan Life Insurance Company, and the members of the Council, Drs. A. S. Beggs, G. H. Bigelow, R. C. Cabot, H. F. Day, G. S. Derby, R. H. Miller, Stephen Rushmore, J. S. Stone, C. F. Wilinsky and George Wright.

Dr. Fisk spoke as follows:

Not only because of the Institute's plans in Boston, but because of the nation wide professional interest in periodic health examinations, it seems advisable to make a brief statement as to the birth and the growth of this movement. For even the best friends of the Institute often have vague notions on these matters; accepting the Institute and its work on the basis of its present service. The facts are these:

In the early part of 1909, Dr. Burnside Foster, Editor of the *St. Paul Medical Journal*, recommended, in an address delivered before the Life Insurance Presidents Association, that insurance companies give free examinations to their policy holders every five years, predicting that the mortality saving would cover the cost. At that time there was no tested experience to justify such a prediction. It was made on general principles. Life insurance company experts who were present were opposed to the proposition. It was regarded as chimerical. Nevertheless it appealed to me strongly, as I had been planning educational health work among policy holders with the same end in view, and had written a paper on the subject in 1907. To Mr. Rittenhouse, President of the Provident Saving Life Assurance Society, of which I was Medical Director, I reported the situation, advising that we try the experiment. He agreed. We established a health bureau, which issued a monthly health bulletin, and offered free periodic health examinations to all the policy holders annually. Several thousand took advantage of this privilege.

At the end of three and one half years, the mortality experience was analyzed by Mr. Arthur Hunter, Actuary of the New York Life Insurance Company, who showed a mortality saving close to that recently reported by the Metropolitan Life Insurance Company. At the end of five years the mortality experience of the Provident Saving Life Assurance Society group was reviewed by Mr. C. W. Jackson, Actuary of the Postal Life Insurance Company, which had taken over the Provident Company. This study confirmed the earlier finding that the mortality saving more than paid for the cost of carrying on the work.

In 1913, Mr. Harold A. Ley, who for several years had been turning this problem over in his mind, tried to enlist the interest of Professor Fisher. At first he opposed the proposition as it seemed a commercial one. But when Mr. Ley proposed that an organization be established on a semi-philanthropic basis with sufficient business interest to insure efficient management, he agreed to assist Mr. Ley in the establishment of a Life Extension Institute, to do this work on a large scale, particularly for the life insurance companies. As I had had special experience with this plan, and had already made a scientific demonstration of its life saving power, they asked me to take charge of the scientific end of the enterprise.

A banquet was arranged at which the presidents of the more important Life Insurance Companies were present, as well as distinguished laymen and physicians, including General Gorgas. The proposal was favorably received by practically all, but only the Metropolitan Life Insurance Company took action. Mr. Haley Fiske, President of that Company, stated at the banquet that his company would include this measure in its health program, the privilege being extended to holders of policies of two thousand dollars or more. Subsequently the Connecticut General of Hartford, and the Guardian Life of New York took similar action. At the present time forty companies offer their policy holders the services of the Life Extension Institute.

It is important that members of this Council and the profession generally should understand that the insurance companies did not finance this movement, and that they are simply customers of the Institute. The Institute's relations with the policy holders are strictly confidential, and no reports of impairments are made to Insurance Companies,—the sole end and aim of this service being to prolong human life and make it more livable.

The Institute jogged along with these pioneer patrons, also doing some work for industrial concerns and individuals, but sustaining a heavy deficit during its first five years. It paid no interest to Mr. Ley and his associates. until

1923. Mr. Ley served as active President without compensation. Even during the first lean years substantial financial contributions were made to public health measures such as the reclamation of registrants declined in the draft; and the propaganda of the National Health Council for Periodic Health Examinations; also for establishing Periodic Health Examinations in the Post Office Department. The Institute has also contributed liberally throughout the country to county societies and voluntary health organizations interested in establishing this work.

Shortly after the pioneer work in the Provident Company, Dr. Dobell of England wrote me that he had recommended a similar plan to the British life insurance companies a number of years previously. Dr. George M. Gould called attention to an article on pre-clinical medicine written in 1902, in which he had discussed the importance of a periodic biologic survey. This paper formulated no definite program and had no influence on the genesis of the movement. Professor Louis Renon read a paper before the Paris Academy of Medicine several years ago, strongly advocating health examinations, and stating that twenty years earlier, Dr. Barres of Paris had urged such a measure. No doubt many practitioners have had similar ideas, but the actual demonstration to the profession and to the public was the outcome of Dr. Burnside Foster's suggestion and the activities of the men associated with me in giving it practical application. For ten years the Life Extension Institute bore the financial and scientific burden of creating both public and professional sentiment in favor of this measure.

The Institute does not seek to displace the general practitioner, either in this particular field or in any other. There are 110,000,000 people in the United States who should be physically examined. There is work enough for everybody. The Institute wishes to develop sound standards and specialized methods of doing this work, and to help stimulate the interest of the general practitioner in providing an adequate service of this type for his patients.

This service can be carried to the people only by consistently carrying on a publicity campaign in favor of these examinations by private physicians as well as through the Life Extension Institute.

With regard to the situation in Boston, I have drawn up the following outline of our program for the consideration of the Council. It is our purpose to conduct the work in Boston strictly in accordance with the judgment of the Council inasmuch as its members are best informed as to the type of service most helpful to the health of their fellow citizens and the development of sound scientific medical service in this city.

Dr. Fiske then read the following prepared statement:

THE PURPOSES OF THE LIFE EXTENSION INSTITUTE

BY EUGENE L. FISKE, M.D.

Medical Director, Life Extension Institute

I should like to make clear certain fundamental principles relating to our work.

First, the service that we are arranging is a *pre-clinical* service, wholly different from the type of service that would be rendered by a general practitioner *even in the making of a periodic health examination*.

In what does the principal difference lie? I should say, in the fact that our service is a preliminary one, except in those cases where no pathology is found and the case comes strictly within the field of personal hygiene. (In such a case, where the individual is not referred for medical treatment, our interpretation and counsel may be regarded as final until the next periodic survey). Where pathology is found and treatment is indicated, we simply pass the evidence over to the clinician for final diagnosis and treatment to be outlined. We are not interested in diagnosis in the ordinary sense of the term. Our purpose is to analyze the life and the body of the individual, to make a *spot-map* of his errors in living and his physical defects, and also his faulty mental attitudes—counseling in regard to these matters, so far as it is proper to do so, but in the event that he needs medical treatment to turn over to his physician all the data elicited, with any tentative recommendations as to the required treatment and followup.

I do not need to tell you that this is new work. The average physician has not been trained to do this type of work. It is not alone that he usually lacks the full equipment,—both as to training and apparatus for making what we consider a thoroughgoing top-to-toe examination—but his chief deficiency is his faulty mental attitude toward the problems involved.

The average practitioner is busy with the emergencies of medicine, the things forced upon his attention by sick and suffering people. His sense of proportion is usually violated by being confronted with a report emphasizing the need for attention to conditions which have not yet affected the individual to the point of making him manifestly ill. This is a serious problem that interferes with the success of our work. It hampers our efforts to secure full cooperation from our 8000 examiners. It is the chief difficulty which we encounter in training our head office staff to measure up to these ideals. It is hard to get out of the minds of these men accumulated clinical traditions. It takes time and experience in this work to impress upon them the protective value of the various pro-

cedures that we recommend and which, to them, seem of so little importance from the *curative* standpoint.

STANDARDIZATION OF WORK

It is for this reason that we have found it necessary to standardize our work, to reduce to a system the interpretation and evaluation of the disabilities that are commonly found. In covering our large mass of examinations, our *only safety* is this standardization: In the long run it protects us and our patrons just as the standardization of medical selection in life-insurance protects the life insurance company.

We ask of our examiners a careful report of their findings, and we particularly emphasize the importance of giving us what is termed "the slant" on the case, so that we may not misuse in applying our standardized counsel. While here and there we may force a man into a Procrustean bed, in the long run, this standardized counsel protects the individual and the Institute from sloppy, uneven work on the part of the examiner in the matter of interpretation and counsel.

We fully appreciate the handicap of this institutional work, the fact that the contact is so different from that in clinical family practice. But I submit that any criticism applied to our system must be based upon relative values. We well know that any type of human service must have its weaknesses and its liability to error. In criticising this life extension work we must, in fairness, compare it to *clinical service as now rendered*. Of the weaknesses of that service Dr. Cabot could tell you something from his dead-house experience; and I could talk to you for hours from the records of our Institute, showing the uneven, half-baked, careless attention that so many people secure in hurried clinical contacts. The unnecessary differences of opinion, or at least differences of counsel, that characterize clinical work in relation to the regulation of living habits and the influence of certain types of impairment—such as overweight, focal infection, constipation, diet, and exercise—are such that it is a matter of guesswork as to what kind of advice any individual will secure as to his disabilities in going from one physician to another.

Those of us who are frank in recognizing the actual situation will readily admit that these differences of opinion are, in the main, unnecessary and unwarranted by the present state of scientific knowledge, being merely a reflection of the chaotic state of the average clinician's mind in relation to such matters. Confronted with some immediate emergency in medicine, he meets it competently—so far as scientific knowledge enables him to. But, confronted with the task of outlining a mode of life, of considering the actuarial risk carried by an individual with a certain type of disability, he is on unfamiliar ground and more than likely to

go to extremes either of optimism or of pessimism in his counsel.

We may assume that, on the average, we are justified in taking a standard position in regard to the influence—for example—of focal infection, of overweight, of defective vision, a history of gonorrhoea, the need for a Wassermann test, etc. In long experience in dealing with individuals, we have developed a systematic and methodical way of commenting upon these disabilities. This is the ultimate safeguard of the service, and attains *two purposes*: 1st, protection of the Institute from the danger of giving out hasty, half-baked incompetent counsel, and, 2d, checking up of the examiner's work and of his mental attitude toward our problem.

THE EXAMINER'S PLACE IN THE SYSTEM

This does not prevent the examiner from being a human factor in the situation. It is to him that we must look for our facts and for our "slant" on the case. The form that our definite and final counsel will take, based upon these data, is protected by the full resources of the Institute assembled in our Reviewing Department. There is no reason why the examiner—especially here in Boston where we can keep in intimate relations with him—should not exercise to the full his individual judgment, his powers of persuasion, and of personal counsel—simply keeping within safe bounds so that *he may be protected*, as well as the individual and the Institute, from premature judgments which may be subject to change on a full analysis of the case. If the examiner will play the game with us squarely, and take the precaution to touch off the significant aspects of the case, just as a faithful artist would portray a countenance, we at the Head Office will take this outline from him and do the mechanical work of filling it in.

I would like to explain that we have tried both methods: (1) that of resting the chief responsibility upon the examiner. This works very well in our industrial groups, because the psychological situation is vastly different. But the individual subscriber, paying a substantial sum for the service, rejects the purely individual service as compared to the *institutional* service. Those complaining of our institutional service because of its formal character have been most strongly opposed to the substitution of an individual service. They desire the full formal outline of their conditions and a careful, well-balanced letter of interpretation and counsel. Even the life insurance policy holders upon whom the individual service was tried rebelled strongly and asked for a return to the institutional form. They were for the most part wisely and effectively counseled by the examiner, and received a copy of his report; but they would write in asking when they

would receive their full report and their usual letter of advice from the Institute.

BOSTON OFFICE

We propose to introduce this service in Boston very carefully and conservatively. Our examiners will strictly refrain from referring cases to any special center or physician for treatment. They will refuse to take any cases themselves for treatment.

We must expect that many of our reports will be criticized. Nose and throat specialists will say that they find nothing wrong with the tonsils. Laboratories will report that they find no albumin in the urine. Men who are overweight will be told that they do not need to worry about it—that overweight will not kill them. I wish to ask the cooperation of the Council in correcting false notions among physicians who may raise these questions. Remind them that the counsel of the Institute is based upon an experience with some 350,000 lives, in addition to the information available in life insurance experience on millions of lives; that the only way to check the pathological changes which inevitably cause death in all cases—and in most cases prematurely—is to seek not merely for the preclinical *symptoms* of organic trouble but for the preclinical *causes* of organic trouble. We must look far in advance of enlargement of the heart, or irritation of the kidneys, or hardening of the blood vessels, for the factors that may bring about these conditions—even when no vital organ is affected or no part crippled—and check them up as a measure of *protection*, and not on the basis of cure.

The Institute will make fundamental physical examinations in all cases; and upon the results of the examination, and taking the personal history into consideration, we will recommend certain follow up measures in the majority of cases. This may be misunderstood in many cases as a mere attempt to pile up service; but the more we study human material the more complex we find the problems confronting us. Rarely can these problems be fully solved by the simple physical examination, and even after we give all that we can supply, there may be need for therapeutic observation and diagnosis. These lives out of joint can seldom be instantaneously adjusted.

JUDGMENT OF THE SERVICE

Finally, I repeat, that our system must be judged by comparison with *existing* methods—that is, our ratio of success in accomplishing the specific aims of our service must be compared with the ratio of success in *practice*, in dealing with these maladjusted lives and cases of chronic derangement, that supply most of the material that occasions criticism and debate.

RELATIONS TO FAMILY PRACTITIONER

There is no purpose on the part of the Institute to displace the family practitioner or to offer a substitute for the service he has been accustomed to render. On the contrary, we feel that these reports will place the family practitioner in a position to function to the highest degree of efficiency. All that is best in his intimate personal relations with the patient can still be utilized; but the patient will be protected from a superficial analysis of his condition, or—what is equally harmful—an over-intensive consideration of special phases of his condition by a succession of general practitioners or specialists that he may consult.

The chief error of the clinician lies in failing to recognize the degree of physical deficiency which exists among civilized people. He takes too much as a matter of course the waning physical vigor that comes after early maturity. He sees no particular reason for interfering with the average human life cycle. This state of mind offers a tremendous resistance to the message of the Institute; but, gradually, medical thought will be molded by such leaders as Dr. Cabot and Dr. Mayo, and others who fearlessly state the truth regarding human conditions, regardless of pessimism or optimism.

MEDICAL PROGRAM

Medical men must accept the thesis that premature disease, old age, and death are not caused by *Time*, but by specific factors, many of which can be overcome. I have grouped them as follows:

- Heredity
- Infection
- Poisoning
- Food deficiency and food excess
- Hormone deficiency and hormone excess
- Physical apathy or disuse, and physical strain or injury
- Psychic apathy or disuses, and psychic strain or injury.

Dr. Cabot has wisely said, "There are probably as many fish in the sea as ever came out of it. There are probably more unrecognized poisons, infections and mal-adjustments than are recorded in the text-books."

Surely these surveys offer the best hope for discovering and identifying not only the known pre-clinical causes but also those not yet listed. Under these categories may be placed all the possible influences that reduce the life span and health span. It is our duty to look for these factors and examine them, and eradicate them. This is a sound, logical, scientific program, comparable to a military program of attack on a foreign enemy, which takes into account the strong and weak spots of the enemy's lines, and endeavors to concentrate the resources of the attacking party at the critical points.

A frank discussion of the work of the Institute and of the plans for the Boston Branch followed.

The facts regarding the prolongation of life among insured individuals who were given the benefit of examination and advice by the Institute was clearly brought out, and it was made plain that the greatest service rendered was in general the result of the early examinations.

The need of perfecting the technique of the examinations and of the manner of giving advice was particularly emphasized and the hope was expressed that much might be learned in the work of the Boston office. It was emphasized that the histories and examinations must be searching and not perfunctory, and that the advice given must be not only sound medically but must take account of the many personal factors which make up life.

Emphasis was laid upon the delay and neglect of the Medical Schools in teaching students the work of preventive medicine along the lines of the Institute. It was pointed out that the public becomes interested in matters of health if properly stimulated.

In general the opinion was that the family physician should do more and more of the work initiated by the Institute, though Dr. Fisk felt that the need of the Institute would continue because of the opportunities to investigate through the large number of individuals studied.

Toward the close of the discussion the following statement and criticism was presented as representing the viewpoint of many prominent Boston physicians.

A. Is the Life Extension Institute productive of good in the Community?

1. It is the only large-scale attempt to do preventive medicine upon the individual. All other types of preventive medicine have been community attempts to stamp out disease. The idea of early periodical physical examinations is a good one. Some machinery must be used to bring this about. Physicians themselves cannot advertise, and the Life Extension Institute has been able to make an appeal to the public that is increasing its number of physical examinations by fifty per cent. annually.

2. That definite increase in well-being and length of life results from these examinations is apparently proven by the Metropolitan Life Insurance statistics, in which the expectancy of life in a group controlled by the Life Extension Institute was definitely increased above other control groups.

B. The Life Extension Institute is coming to Boston. There has been created a committee of representative physicians who, by acting, make themselves sponsors for the value and success of the Institute.

C. The Life Extension Institute as carried on in New York has followed a policy apparently mistaken in certain fundamental respects,

making for poor medicine and in certain instances injury to the patient:

1. Laboratory work unnecessary and unscientific or pseudo-scientific in character is done. This results in unjustifiable expense to the Institute, and so to patient; in a false sense of the thoroughness of the Institute's examination, thereby causing the patient to lose confidence in his physician who does not make these tests.

2. Reports are made out in New York and sent to the patient, containing the details of the various examinations, many of which cannot be correctly interpreted by physicians themselves. These reports in many cases do definite psychic injury to the patient, and instead of improving his next ten or fifteen years of life, may act seriously to handicap him.

3. This would be true even were the reports written by the local examiner himself (for detailed results of chemical tests, x-ray finds, etc. should not be put into the patient's hands), but where such reports are written in a distant City, sometimes on insufficient or misleading evidence and without knowledge of the psychology of the patient, the possibilities of harm are great.

4. It is understood to be the plan of the organization to place an x-ray machine, to be run by a trained technician, in its Boston Office. X-ray interpretations or plates will be sent to New York for diagnosis and inclusion in the general report to the patient. Since it is evident that considerable emphasis is being laid on x-ray examinations which are being done as routine, it is worth considering what type of x-ray service such a scheme will offer. It will not be necessary to point out to the individuals on the Committee the impossibility of securing even adequate x-ray service under this plan. No technician who is not also a physician can interpret the fluoroscopic findings which so often make up the sole evidence of pathology in the given patient. Plates sent to New York for interpretation, no matter how well taken, may fail entirely to disclose the abnormality. X-ray examination relied upon for diagnosis without clinical knowledge of the patient has already produced some rather extraordinary statements from the Life Extension Institute.

5. The Director of the Life Extension Institute in Boston should have some weight in determining the policy of the organization, at least in that city; he should have the organization of the examiners, consultants, etc. in his hands and should be given a salary commensurate with the responsibilities and labor entailed. If these conditions be not met, it will be difficult or impossible to secure the services of a first-class man, and the result will be that the Committee will find itself responsible for a piece of work done in a second-rate manner.

D. In Sum:

The Life Extension Institute is coming to

Boston. The fundamental idea of periodical annual life examinations is sound. The organization is the only one doing preventive medicine upon the individual. Certain policies of the organization as handled in New York are unwise. The question arises whether members of the Committee can endorse these policies.

It is suggested that:

1. The outline of physical examination and history be reconsidered, that the type and number of laboratory tests be revised, and that only such tests be used as are generally recognized as being of value.

2. That reports be written by the physician who examines the patient, and copies sent to the New York Office for filing, or for approval before being sent to the patient. That at the examiner's discretion a personal interview with the presentation of the Institute's findings should be substituted for the routine report. At such time a written summary of the findings might be handed to the patient.

3. That reports shall not necessarily include the actual figures representing the results of the various tests.

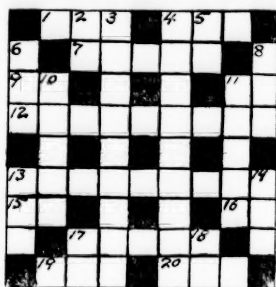
The above three suggestions would make less laboratory work necessary, save expense to the Organization, avoid to a large extent the making of nonclinical and therefore inexact diagnoses, would prevent the damage to the patient's morale which is now often caused by the patient's misinterpretation of a detailed report.

4. X-ray examination when necessary should be done by capable x-ray consultants, by arrangement made through the local office.

5. The highest type of preventive medicine should be practiced by the Life Extension Institute. To this end an able man should be acquired as medical director. He should be given a fitting salary and, with the local Committee, definite influence in determining the policy of the organization, at least locally.

In closing the discussion Dr. Fisk stated that every endeavor would be made to have the advice given or approved by an examiner who had personally seen the person examined. He stated that the work of the Institute was for the protection of the individual and that many tests were made with a view to their protective value rather than their diagnostic value in established disease. Completeness of examination, he stated, encouraged care. Dr. Fisk laid stress upon the search for the cause of disability rather than the diagnosis of disease. Classification of the risks to life and health was one great aim of the Institute. In general, the members of the Council felt that the examiners must constantly make diagnoses and that there could be no line drawn between the work of the Institute and the work of the physician but they recognized the importance of the emphasis placed by Dr. Fisk upon the search for the cause of disease.

THE DOCTOR'S DILEMMA



ACROSS

1. The obstetrician's curse.
4. An alkaline earth (abbrev.).
7. Lowest possible.
9. Labor cry.
11. A famous university (initials).
12. Medical gold mine.
13. Drugless practitioner.
15. What we all should make and don't.
16. Adverb.
17. Both sides (abbrev.).
19. A favorite presentation.
20. Initials of a deceased president of the Massachusetts Medical Society, also of a famous playwright.

DOWN

2. Midwifery (abbrev.).
3. Perverved appetite.
4. A large phagocyte.
5. Chemical symbol.
6. Bad for the gouty.
8. Invaluable in research.
10. A carbohydrate.
11. A fecal form.
13. Out-Patient Dept.
14. Internes.
17. A popular chew.
18. Acid-fast.

Solution will appear in next week's JOURNAL.

SULPHIDES PROVE GOOD REFLECTORS
OF ULTRA-VIOLETPUT RAYS ON RIGHT SPOT, BUT SCATTER LIGHT
AND HEAT THAT BURN, GOOD FOR TREATING
THROAT WITH SUNLIGHT

"WHAT is the best material for making laryngoscope mirrors?" was a question the Bureau of Standards undertook to answer. A laryngoscope is used in the treatment of the throat by means of sunlight, and in sunlight it is the ultra-violet rays that do the good, while the abundant visible light and heat rays do no good and are apt to cause burns. Hence what is wanted is a surface that will be a good reflector of ultra-violet rays, but will scatter or absorb light and heat.

The Bureau of Standards found, as the result of an investigation, that sulphides of certain metals give the results desired. These

sulphides have a high metallic lustre, and proved to have a high selective reflection of the ultra-violet rays and a lower reflection of the visible and infra-red rays, which is just the opposite of the reflective properties of the metals.

The results of these tests are reported in Scientific Paper No. 493 of the Bureau of Standards, entitled "Ultra-violet Reflecting Power of Some Metals and Sulphides." Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. The price is 5 cents, cash.

INDUSTRIAL ACCIDENTS TO WORKING
MINORS

7,478 industrial accidents to young workers under 21 years of age occurred in one year in three States, according to a study just completed by the Children's Bureau of the U. S. Department of Labor.

Thirty-eight of these accidents resulted in death and 920 in partial disablement for life.

Wisconsin, Massachusetts and New Jersey were the States included in the study. The cases of industrial accidents to minors were secured from the files of State Industrial Commissions and Accident Boards and were only those in which compensation had been paid; that is, in Wisconsin, accidents causing disability of more than 7 days' duration; in Massachusetts and New Jersey, accidents causing disability of more than 10 days' duration.

The smallest number of accidents and the lowest accident rate occurred in the case of children under 16. Each of the States studied had attempted to protect children under this age by prohibiting them from employment in certain occupations, chiefly in the operation of the more dangerous machinery, which is the source of greatest accident hazard to the young worker.

Children of 16 and 17 were prohibited from some employments in Massachusetts and Wisconsin but in all three States were permitted to operate many of the dangerous machines.

Accident figures reflected this difference in legal protection. Power-working machinery caused a larger percentage of the accidents to the 16 and 17 year olds than to children under 16—protected by law—or to young workers between 18 and 21—better able to protect themselves.

Accidents were also more serious to the 16- and 17-year group than to either the younger or older workers. Of the injuries to workers under 16, 10.7 per cent resulted in death or partial disablement for life. For those 16 and 17 years old who were injured, the rate was 13.4 per cent killed or permanently disabled; for the group 18-21 years the rate was 12.7 per cent.—*U. S. Department of Labor Children's Bureau.*

THE WINNING FIGHT AGAINST TUBERCULOSIS

THAT the fight against tuberculosis is being won is indicated by figures furnished by the State Department of Health. These statistics show a rapid decline in death rate from tuberculosis during the past few years. Taking the averages for 5 year periods to even up any irregularity in annual rates, it is found that the average number of deaths per year per 100,000 population from all forms of tuberculosis for the past 29 years has shown a very marked decline as indicated by the following table:

AVERAGE DEATH RATES FROM ALL FORMS OF
TUBERCULOSIS IN CONNECTICUT
1895-1923

5-year period	Average death rate	5-year period	Average death rate
1895-1899	171.4	1910-1914	145.8
1899-1904	170.7	1915-1919	138.6
1905-1909	161.6	1920-1923 (4 yrs.)	98.8

The lowest rate for any one year was 89.3 in 1923. Present indications are that the 1924 rate will be still lower. The tuberculosis death rate has already been lowered to such an extent that a number of diseases now cause more deaths than tuberculosis. Death rates for the past four years from tuberculosis, cancer and pneumonia indicate that cancer and pneumonia now each exceeds tuberculosis in the number of deaths caused as shown in the following table:

DEATH RATES FROM TUBERCULOSIS, CANCER AND
PNEUMONIA IN CONNECTICUT

Year	Tuberculosis	Cancer	Pneumonia (all forms)
1920	118.5	99.8	149.6
1921	95.6	97.4	97.2
1922	92.7	104.2	121.8
1923	89.3	98.3	127.3

(Rates are per 100,000 population)

Still other diseases that rival or even exceed tuberculosis in number of deaths caused are apoplexy, heart disease and Bright's disease. Thus tuberculosis has already yielded first place among the causes of death in Connecticut and appears destined to continue on the downgrade as an important cause of death, provided the attack upon it is continued with unabated vigor. To this end all agencies concerned in combating tuberculosis should keep up their work.

Investigations have shown that from one-fourth to one-half of the cases of certain forms of tuberculosis among children are caused by germs of the bovine type which means that these germs were obtained by drinking milk from tuberculous cows. In their work of protecting children from this hazard the State Commissioner on Domestic Animals weeds out tu-

berculous cows and the State Dairy and Food Commissioner fosters and supervises the pasteurization of milk to kill the dangerous germs.
—*Bulletin, Connecticut State Department of Health.*

MORTALITY FROM TYPHOID FEVER: 1923

THE Department of Commerce announces that there were 6,635 deaths from typhoid fever in 1923 in the death registration area, which comprised about 88 per cent. of the total population of the United States. The death rate in 1923 from this disease was 6.8 per 100,000 population, by far the lowest ever shown for the registration area.

Deaths and death rates from typhoid and paratyphoid fever in the New England States:

Area	Number of Deaths		Death rate per 100,000 population			
	1923	1922	Adjusted	Crude	1923	1922
Connecticut	38	45	2.5	3.0	2.6	3.1
Maine	52	49	6.6	6.2	6.7	6.3
Massachusetts	70	88	1.6	2.1	2.4	2.2
New Hampshire	15	23	3.5	5.4	3.4	5.2
Rhode Island	7	8	1.0	1.2	1.1	1.3
Vermont	11	16	3.2	4.7	3.1	4.5

DEPARTMENT OF COMMERCE,
Washington.

MORTALITY FROM CANCER: 1923

THE Department of Commerce announces that 86,754 deaths were due to cancer in 1923 in the death registration area, which comprised 87.6 per cent. of the total population of the United States, and that, if the rest of the United States had as many deaths from this cause in proportion to the population, the total number of deaths from cancer in the entire United States would have been 99,000 for 1923, against a corresponding estimate of 95,000 for 1922. The death rate from cancer in the registration area in 1923 was 89.4 per 100,000 population as against 86.8 in 1922.

Deaths and death rates from cancer and other malignant tumors in the New England States:

Area	Number of Deaths		Death rate per 100,000 population			
	1923	1922	Adjusted	Crude	1923	1922
Connecticut	1,466	1521	90.7	95.9	99.3	105.0
Maine	995	964	88.8	86.3	128.0	124.4
Massachusetts	4760	4637	99.8	98.4	118.2	116.6
New Hampshire	549	611	82.3	91.8	122.7	136.9
Rhode Island	717	751	100.9	106.9	114.4	121.1
Vermont	439	456	84.7	88.0	124.6	129.4

DEPARTMENT OF COMMERCE,
Washington.

NOTICE TO PHYSICIANS RELATING TO
SCHICK OUTFITS

HEREAFTER the Schick outfits distributed by the State Department of Public Health will contain only one capillary tube of toxin, instead of two as formerly. Experience has shown there is so little breakage of these capillary tubes that the extra tube is unnecessary, and since these tubes constitute the most expensive item in the package it has seemed desirable to omit one. It is suggested that all outfits be inspected upon their receipt, and if the small toxin tube should be found to be broken another outfit should be used.

EUGENE R. KELLEY, M.D.,
Commissioner.

Massachusetts Department of Public Health.

SHALL WE LEAD A DOG'S LIFE?

In a certain part of the State a dog died of rabies. He had become ill and had been taken to a veterinarian hospital where he remained a few days before death. The diagnosis of rabies necessitated inquiry as to any persons who might have been exposed. It was found that, during the early days of illness, members of the owner's family had been in contact with the dog and might have become infected by having the dog lick their hands.

His wife thought the dog was choking and tried to open its mouth with her bare hands, thus directly exposing herself to infection. Accordingly, it was suggested to the owner that his children, and especially his wife, be safeguarded by protective treatment. The man objected, saying he did not believe in vaccination and other similar protective measures against disease. *He would not consider for a moment the proposition of protecting his wife and children against the possibility of rabies.* He said that if symptoms developed then he would think about it. He was told that if symptoms developed it would be too late and that no possible treatment could save the life of a person after symptoms of rabies had developed. Still he was adamant and would not hear of protective treatment.

It was suggested to him that his other dogs might come down with rabies. At once he was interested. "Do you suppose there is any danger?" he asked. He was assured that of course there was danger since the other dogs associated with the rabid dog after he was taken ill and before he was taken to the hospital. "Well," he said, "I will take them down to the veterinarian at once and have them vaccinated." *Two of his dogs were thus protected from rabies by treatment.* He could not afford treatment for a third dog which was killed on orders from the Bureau of Domestic Animals.

Perhaps health officials may be pardoned for smiling at the curious idea of relative values

between wife and children on the one hand and dogs on the other. But what can be said of the peculiar mental process by which a man believes in the use of rabies virus to protect his dogs but not to protect his wife and children.—*Health Bulletin, Connecticut Department of Health.*

BOOKS RECEIVED FOR REVIEW

Pediatrics. By Isaac A. Abt. Volume IV. Philadelphia and London: W. B. Saunders Co. 1271 pages. Price \$10.

Aids to Surgery. By Joseph Cuning and Cecil A. Joll. New York: William Wood & Co. 434 pages. Price \$1.50.

Facial Surgery. By W. P. Pickerill. New York: William Wood & Co. Edinburgh: E. & S. Livingstone. 162 Pages. Price \$6.50.

A Textbook of Materia Medica for Nurses. By A. L. Muirhead and Edith P. Brodie. Second Edition. St. Louis: C. V. Mosby Co. 190 pages. Price \$2.

Anatomy of the Human Body. Twenty-first Edition. By Henry Gray. Philadelphia and New York: Lea & Febiger. 1417 pages. Price \$10.

Modern Methods in the Diagnosis and Treatment of Renal Disease. By Hugh MacLean. Second Edition. Philadelphia and New York: Lea and Febiger. 110 pages. Price \$2.50.

Basal Metabolism in Health and Disease. By Eugene F. DuBois. Philadelphia and New York: Lea and Febiger. 372 pages. Price \$4.75.

Principles of Biochemistry. By T. Brailsford Robertson. Second Edition. Philadelphia and New York: Lea and Febiger. 796 pages. Price \$8.50.

Pathogenic Microorganisms. By William Hallock Park, Anna Wessels Williams and Charles Krumwiede. Eighth Edition. Philadelphia and New York: Lea & Febiger. 811 pages. Price \$6.50.

A Text-book of Biology. By William Martin Smallwood. Fifth Edition. Philadelphia and New York: Lea and Febiger. 393 pages. Price \$3.75.

The Physiology of Exercise. By James Huff McCurdy. Philadelphia and New York: Lea and Febiger. 242 pages. Price \$3.

U. S. DEPARTMENT OF LABOR, CHILDREN'S BUREAU, WASHINGTON

ANNUAL REPORT, CHIEF CHILDREN'S BUREAU

National attention to the prevention of sex delinquency among children is urged by Grace Abbott, Chief of the Children's Bureau of the U. S. Department of Labor, in her annual report for the fiscal year, 1924, made public today.

"There is no field of child study more im-

portant or more neglected than this," Miss Abbott states. "The Children's Bureau has received many requests during the last year to undertake research with reference to the prevention of sex delinquency among children and methods of care for those who have become delinquent. Local communities desire not only facts as to successful handling of these conduct problems in this and other countries but help through consultation by qualified experts." The Children's Bureau has ample authority under the act of Congress creating the bureau to undertake this work, Miss Abbott states, but no appropriation available.

Another recommendation stressed by Miss Abbott is the need for current statistics on a National scale relating to the number of dependent, delinquent, and neglected children, as well as to the number of children legally employed. At present Nation-wide statistics on these subjects are secured only once every 10 years.

Many phases of child welfare and practically every State in the Union were touched during the course of the year's work by the Children's Bureau, Miss Abbott's report shows.

Scientific investigations into problems affecting childhood were made by the bureau's divisions of child hygiene, maternity and infancy, social service and its industrial division. Among the most important studies were:

A demonstration to prove that rickets, widely prevalent among young children, a danger to the lives of infants, and the source of serious loss in the mechanical efficiency of adults, may be eradicated through methods applicable to any community. This demonstration covers a New Haven (Conn.) district with a population of 13,000 and is being carried on by the bureau in coöperation with the Yale University School of Medicine and the New Haven Department of Health. It is to cover a three-year period, of which one year has been completed.

An investigation of the relation of posture to physical fitness was conducted in coöperation with the public schools of Chelsea, Mass., and the Boston Community Health Service. Approximately 1,000 children have had orthopedic examinations and taken special postural exercises regularly. It is hoped that exercises may be devised which can be so directed by teachers that good posture training will be available for all children.

Standards of administration of "Mother's pension" laws, with special reference to housing, health, education and recreation, have been studied in counties in Massachusetts, New York, Pennsylvania, Ohio, Illinois, Michigan, Washington, California and Manitoba, Canada. The importance of this movement to keep mothers and children together and to prevent the break-up of homes is indicated, Miss Abbott points

out, by the fact that 42 States have such laws, and that approximately 130,000 children are receiving aid, and about 43,000 families being kept together.

At the request of the Georgia State Department of Public Welfare and the Georgia Children's Code Commission, a study was made of the care available to dependent, neglected and delinquent children in 30 counties of Georgia, and a preliminary report was submitted to members of the department and of the commission. A study of work being done for dependent, delinquent and physically and mentally handicapped children by local communities in Pennsylvania has been undertaken at the request of the Pennsylvania Children's Commission. In order to ascertain methods of organization and results obtained in pioneer States in the development of county work, brief studies have been made in selected counties in New York, Minnesota, and North Dakota.

Other studies included:

An analysis of the statistics of maternal mortality; an annotated bibliography on the growth and development of the normal child; a study of play and recreation for blind children; the care of children born out of wedlock; the development and methods of family or domestic-relations courts; industrial accidents to young workers under 21 in Wisconsin, Massachusetts, and New Jersey; laws affecting the employment of children and their administration; child workers in the fruit and hop-growing areas of Washington and Oregon; child labor in fish, fruit and vegetable canneries in Washington; vocational opportunities for minors; and work histories of minors of sub-normal mentality in seven cities.

Administration of the Maternity and Infancy Act, Miss Abbott states, through which 40 States coöperated with the United States Government in an effort to improve maternity and infancy conditions, was carried on by a staff of 8 persons in the Children's Bureau, 4 physicians, a consulting nurse, an accountant, a secretary, and a stenographer.

Active coöperation with State bureaus and commissions dealing with children was maintained by the bureau.

OFFERS \$100,000 TO HOSPITAL IN BANGOR

BANGOR, Me.—After the quarterly meeting of the trustees of the Eastern Maine General Hospital Dec. 27 it was announced that the trustees had received an offer of \$100,000 to be used for the construction of a nurses' home. This gift was made conditional on an additional sum of \$50,000 being raised for the hospital. This offer has been accepted by the trustees.

DEATH RATES OF MOTHERS FROM
CHILDBIRTH

THE Department of Commerce announces slightly higher death rates of mothers from childbirth or puerperal causes in 1923 than in 1922.

able for 1923 and 1922, 14 show higher rates from puerperal causes in 1923. South Carolina has the highest 1923 death rate from puerperal causes (9.7 per 1,000 live births), and Utah the lowest (5). Separate rates for the white and colored are shown for only the six

DEATH RATES FROM PUERPERAL CAUSES PER 1,000 LIVE BIRTHS IN THE BIRTH REGISTRATION AREA AND THE
NEW ENGLAND STATES

Area	All puerperal causes				Puerperal septicemia				Other puerperal causes			
	1923	1922	1921	1915	1923	1922	1921	1915	1923	1922	1921	1915
Birth registration area	6.7	6.6	6.8	6.1	2.5	2.4	2.7	2.4	4.1	4.2	4.1	3.7
Connecticut	5.7	5.7	5.3	5.6	2.1	2.0	2.2	1.9	3.6	3.7	3.1	3.7
Maine	8.7	7.6	7.4	6.8	1.8	2.1	1.9	2.1	6.9	5.5	5.5	4.7
Massachusetts	6.3	6.8	6.5	5.7	2.0	2.1	2.2	1.7	4.3	4.6	4.3	4.1
New Hampshire	7.4	6.5	6.2	6.1	1.6	0.9	1.7	1.9	5.8	5.5	4.5	4.2
Rhode Island	6.3	5.5	7.1	6.6	2.4	1.5	3.2	1.9	3.9	4.0	3.9	4.7
Vermont	7.0	7.4	7.3	6.1	1.5	1.5	2.5	1.5	5.5	6.0	4.8	4.6

For the 10 States and the District of Columbia (constituting the "Birth Registration Area" of 1915), the death rate from puerperal causes in 1923 was 6.4 per 1,000 live births as compared with 6.2 in 1922, 6.5 in 1921, and 6.1 in 1915.

Of the 30 States for which figures are avail-

States of Kentucky, Maryland, Mississippi, North Carolina, South Carolina, and Virginia. For 1923 the highest rate for the white appears for South Carolina (7.4), and the lowest (5.4) for both Kentucky and Maryland, while for the colored the highest rate (15.4) is for Kentucky, and the lowest (8.3) for Maryland.

—Department of Commerce, Washington.

SCHOOL HEALTH PROGRAMS

IN an effort to collect and broadcast data from the most successful school health programs now being carried on by secondary schools throughout the country the American Child Health Association is making a nation-wide study. Every secondary school doing any phase of health work is asked to submit its program to the committee of prominent educators, named by the Association, who will select the most practical contributions submitted. Schools submitting material must file their applications to enter the study on or before February 20, 1925.

In announcing this study to be carried on during the second semester of the school year of 1924-25, Miss Emma Dolfinger, director of Health Education, American Child Health Association, stated that only those schools carrying on a definite program which is now functioning in a constructive way will be considered.

"The Association is offering \$1,000 to be divided among the three schools making the most valuable contribution to this general study. This money is to be used by the schools to further the health education program already existing in the schools. We feel that participants contributing to this study should be compensated materially for their trouble. Every enterprise involving the awarding of money may be considered, in a sense, a contest, but we hope that this one will be motivated more by the desire of schools to share their successes with

each other than by the hope of winning the small sum involved. The decisions will be announced by October 1st."

All schools to be included in the study must enroll on or before February 20, 1925. If your school is east of the Mississippi River your application should be sent to the Secretary of the Secondary School Health Program Study, American Child Health Association, 370 Seventh Avenue, New York City. If you are west of the Mississippi River send the application to the western office of the American Child Health Association, 221 Sharon Building, 55 New Montgomery Street, San Francisco, California.

THE WORLD'S CHILDREN

WEEKLY NOTES ON CHILD-WELFARE TOPICS COMPILED BY THE U. S. CHILDREN'S BUREAU

A CHILD-WELFARE PROFESSORSHIP

CHILD WELFARE is now recognized as a subject worth the attention of colleges and universities. Evidence of this is seen in the fact that a chair of instruction in the welfare of the child has been endowed at the University of Pennsylvania.

CORRECTING PHYSICAL DEFECTS IN SCHOOL
CHILDREN

Over 163,000 defects are reported to have been corrected as a result of the physical exam-

ination of New York City school children. The weekly bulletin of the New York Department of Health gives these figures and also reports that examination of children applying for employment certificates showed a decrease in the percentage of defects discovered during 1923 as compared with previous years.

ENGLAND'S LOW INFANT DEATH RATE

According to the report of the Registrar General for the third quarter of 1924, the infant mortality rate in England and Wales during that quarter was the lowest ever recorded in those countries—54 per one thousand live births. The United States rate in 1922 for the birth-registration area was 76.

ANNOUNCEMENTS FROM HARVARD SCHOOL OF PUBLIC HEALTH

PROFESSOR CLARE E. TURNER, Associate Professor of Bacteriology and Public Health of the Mass. Inst. of Technology, is starting a course in Public Health Education to be continued through the months of January and February. The meetings are held on Monday and Friday of each week at 7 P. M.

Dr. M. J. Rosenau of Harvard Medical School started his course in Epidemiology on Tuesday, Jan. 6th. Lectures will be given on Tuesdays and Thursdays at 3 to 5 P. M.

HARVARD MEDICAL SCHOOL

Dr. Homer Smith began his course of lectures on "The Permeability of Tissues to Electrolytes and Non-Electrolytes" on Thursday, January 8th, at 4.30 P. M. Lectures will be held at the Harvard Medical School, Bldg. C-1.

DEACONESS HOSPITAL NOTES

A SPECIAL meeting of the Staff of the Deaconess Hospital was held on December 29, 1924. The following new appointments were announced:—

Dr. Z. B. Adams and Dr. Mark Rogers, Consultants in Orthopedic Surgery.

Dr. George Tobey, Consultant in Ear, Nose and Throat.

Dr. H. C. Robinson, Consulting Dentist.

To the Associate Staff were added Dr. Roger I. Lee, Dr. Lyman Richards, and Dr. Joseph Meigs.

Prizes for original work were awarded from the W. L. Shearer Fund by Dr. Joslin to Mr. L. Millard Smith, a student at the Harvard Medical School, who devised an apparatus for testing the sugar in the urine with 1 c.c. of Benedict's Solution and a simple pipet, and to Mr. E. D. Kiefer, who devised a blood sugar apparatus which is easily portable and cost about \$18 instead of \$135. By means of this apparatus any doctor can easily perform an es-

timation of the amount of blood sugar. Both kinds of apparatus are made by the Emil Griener Company, 55 Fulton Street, New York City.

Dr. Joslin also announced further contributions by Mr. W. L. Shearer to be used for the care of patients and in aid of the scientific work of the hospital.

REMOVALS

DR. HENRY B. DUNHAM's present address is Trenton, N. J., 619 Stuyvesant Ave.

DR. C. E. RODERICK has moved from Wrentham to the Foxborough State Hospital.

DR. J. M. CLAFFY has moved from Millersville to Gambrils, Maryland.

DR. J. E. COLEMAN has moved from the Worcester City Hospital to Rochdale (Leicester).

DR. HORACE GRAY is now at the Santa Barbara Clinic, Santa Barbara, Calif.

DR. ARTHUR I. SHAIN's office address is now 110 Salem St., Boston.

DR. BORIS RAPOPORT has moved from Columbia Road to 87 Maple St., Roxbury.

DR. ELLIOTT S. A. ROBINSON of Jamaica Plain has moved from South St. to 17 Halifax St.

DR. HARRY A. BARNES has moved from Brookline to Dedham. His office is at 520 Commonwealth Ave., Boston.

RECENT DEATHS

LOUGEE.—DR. FRANK TAYLOR LOUGEE, former city physician of Lynn, died at his home in that city January 6, 1925, at the age of 62, as a result of a cerebral hemorrhage.

He was born in Effingham Falls, N. H., September 13, 1862, was educated in the schools of his native town and in the medical department of Dartmouth College, where he received his M.D. in 1887. He settled in Lynn in 1889, had been surgeon to the Union Hospital of Lynn and to the Josiah B. Thomas Hospital in Peabody, was a member of the Pension Board and also of a draft board during the World War. Dr. Lougee was a member of the Massachusetts Medical Society, he was a Mason, an Odd Fellow and a Knight Templar. He is survived by a son and a daughter and by two brothers, one of them being Dr. George Goodworth Lougee, a surgeon of Lynn and a member also of the State medical society.

PITCHER.—DR. HERBERT FRANK PITCHER, a retired member of the Massachusetts Medical Society, died at his home in Haverhill, October 28, 1924, at the age of 71. He was a graduate of the University of Vermont College of Medicine in 1879, settled in Haverhill in 1885, and joined the State society, being re-

tired in 1919. At one time he was president of the American Electro-Therapeutic Association. Of late years he practised roentgenology.

WHITNEY.—DR. WILLIAM HERBERT WHITNEY, of Westfield, died suddenly in Savannah, Ga., January 5, 1925, at the age of 66.

He was born in Middletown, Conn., where he received his early education. In 1881 he received an M.D. from the Eclectic Medical College of the City of New York, and in 1885 a similar degree from the Eclectic Medical College at Cincinnati, O. He married Miss Grace Van Sands of Middletown and settled in practice in Westfield, where he became a prominent layman in the Episcopal church. He gave up practice several years ago. He was senior warden of the Church of the Atonement for 20 years; and a delegate to the diocesan convention for 30 years.

He served on the library corporation and library committee of the Westfield Athenaeum and was largely responsible for its large historical collection.

Besides his widow, he leaves a brother, Charles R. Whitney of Springfield.

CORRESPONDENCE

VIENNA LETTER

(From Our Regular Correspondent)

PROTECTING WORKMEN IN STORAGE BATTERY FACTORIES

A report has just been published on the industrial conditions in factories making lead storage batteries, particularly with relation to the danger of lead poisoning. In the construction of lead grids the workman is exposed to the lead dust and lead fumes. In some plants provisions of hoods and exhausts over the kettles serve to minimize the danger. Another danger lies in the making of the lead oxide when this work is done by hand, but in some factories this work is done by machinery which is enclosed, so that there is practically no danger to the operators. Altogether conditions in this country are considered decidedly bad compared to conditions in the same industry in Germany, Great Britain and the United States.

OIL OF CHENOPodium AS A POISON

There has been much discussion in medical literature as to the occasional poisonous effects of oil of chenopodium, or oil of wormseed, which is used in the treatment of hookworm and roundworm. Some experiments to determine accurately the resistance of various animals to such effects have recently been reported by Drs. Wilhelm Aschaffenberg and E. Kleinlein. The toxicity of this substance was found to be distinctly increased in starvation and decreased by feeding a rich carbohydrate diet. Cumulative effects were observed in different animals. Circulation and respiration were depressed. The writers conclude that oil of chenopodium should be given with great care, as it is poisonous even in small doses.

HEALTH RESORT FOR CHILDREN SUFFERING FROM WHOOPING COUGH

A charitable society has recently established on the shore of the Adriatic a health resort for children suffering from whooping cough. Hitherto those children for whom a change of air has been prescribed by a medical man have usually been taken to some place on the seaside or on the Tyrolian Alps, where they associated with healthy children, who were thereby liable to be infected; it moreover often happened that the patients were requested by the hotel proprietors to take their departure as soon as the nature of the disease was known. In order to avoid the risks and inconveniences the society in question

undertook to form a health resort where only families with children suffering from the disease can stay. The establishment will include a number of isolated houses, each for one family; playgrounds and other opportunities for recreation will be provided, and there will be a large separate kitchen in which all the food is to be prepared. The health resort is some distance from other habitations as well as from any frequented main road.

ADIUM IN THE TREATMENT OF RHEUMATISM AND GOUT

In a communication to the Budapest Medical Society Dr. Bela Kelen gives an account of the results which he has obtained in the treatment of rheumatism and gout by radium. He says that of 65 patients, who have been under his care suffering from chronic rheumatism, 31 showed an obvious amelioration, a great number showed a remarkable improvement, and four recovered completely. All the cases have been very severe and were treated without success with other methods. The success obtained in 125 cases of gout is still more striking, as only three showed no change, whilst the remaining 122 were considerably improved and some recovered completely. The differential diagnosis between chronic rheumatism and genuine gout was sometimes rather difficult. Dr. Kelen maintained that it was essential to examine the blood as to the presence of uric acid. In cases of real gout the uric acid generally disappeared under the radium treatment in a period varying from a few days to several weeks, its gradual diminution being accompanied by an improvement of the general symptoms.

CONVICTION OF A QUACK

In a recent case of quackery the offender was less fortunate than his predecessors, who have usually been acquitted. The circumstances were as follows: A man suffering from gall-stones consulted a surgeon, who advised operation. He then saw a well-known quack, who said that he could be restored to health by medicine without operation, and he prescribed something for him, but he died within a year. The public prosecutor then charged the quack with having caused death by negligence. When brought to trial the accused pleaded that the success of an operation for gall-stones was always very doubtful and the man might have died from the cancer even if he had been operated on. The surgeon gave evidence to the effect that the disease was serious when he first saw him, that he had advised an operation, and that in his opinion the strength and the otherwise favorable general condition of the patient had allowed the performance of an operation that could have restored him to health. According to his experience and that of other surgeons he was sure that the patient might have been saved even if after several years another operation might have become necessary on account of the formation of new gall-stones. The court found the prisoner guilty of having caused death by negligence and condemned him to six months' imprisonment. This decision is rather remarkable as the courts have hitherto, as a rule, given verdicts of "Not guilty" when a quack was charged not with direct negligence but only with giving wrong advice, as in the above case.

TEETH OF VIENNA SCHOOL CHILDREN

In his annual report on the school children of Vienna the chief medical inspector appointed by the Board of Education speaks very strongly, both as to the amount of dental caries and as to the absolute indifference shown by the parents when their attention is drawn to it. Most of them think it is hereditary—they, themselves, have had bad teeth, and their children also must suffer. Of 8756 girls examined only 1984 had satisfactory teeth, and the same proportion was found in boys. "Satisfactory" means only that there was no caries, but does not mean

that the teeth were complete. The lack of interest taken in cleanliness and preservation of teeth is all the more regrettable when it is stated that half of the children leave school suffering from dental caries, yet their condition is such that their teeth could be saved at very little expense.

NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL

November the 3rd, 1924.

Boston Medical and Surgical Journal,

Gentlemen—The following notice may be of interest for publication in your JOURNAL:

"Scholarships on the Oliver-Rea Foundation for graduate study in Medicine are available at the New York Post-Graduate Medical School and Hospital.

"Inquiries should be addressed to the Dean, 301 East Twentieth Street, New York City."

Very truly yours,

WILLIAM D. CUTLER.

AMERICAN MEDICAL ASSOCIATION

COUNCIL ON PHARMACY AND CHEMISTRY

Editor, Boston Medical and Surgical Journal:

In addition to the articles enumerated in our letter of November 29 the following have been accepted:

Abbott Laboratories—

Tablets Benzyl Fumarate—Abbott, 5 grains

Gilliland Laboratories—

Diphtheria Toxin Antitoxin Mixture 0.1 L+

Hynson, Westcott & Dunning—

Sealed Tubes Mercurochrome-220 Soluble, 0.5 gm.

Lederle Antitoxin Laboratories—

Intracutaneous Tuberculin for the Mantoux Test

Lehn & Fink—

Corpus Luteum—L. & F. Desiccated:

Capsules Corpus Luteum—L. & F. Desiccated,

2 grains

Capsules Corpus Luteum—L. & F. Desiccated,

5 grains

Tablets Corpus Luteum—L. & F. Desiccated,

2 grains

Tablets Corpus Luteum—L. & F. Desiccated,

5 grains

Ovarian Residue—L. & F. Desiccated:

Capsules Ovarian Residue—L. & F. Desiccated,

5 grains

Tablets Ovarian Residue—L. & F. Desiccated,

2 grains

Tablets Ovarian Residue—L. & F. Desiccated,

5 grains

Ovarian Substance—L. & F. Desiccated:

Capsules Ovarian Substance—L. & F. Desic-

cated, 2 grains

Capsules Ovarian Substance—L. & F. Desic-

cated, 5 grains

Tablets Ovarian Substance—L. & F. Desic-

cated, 2 grains

Tablets Ovarian Substance—L. & F. Desic-

cated, 5 grains

Mellinckrodt Chemical Works—

Mellinckrodt Tetrabromphenolphthalein Sodium

Salt, 5 gm. Ampules

H. K. Mulford Company—

Neorobin:

Vacuum Sealed Tubes Neorobin, 1 grain

Vacuum Sealed Tubes Neorobin, 5 grains

New York Quinine and Chemical Works—

Equinine—N. Y. Q.

E. R. Squibb & Sons—

Bacillus Bulgaricus—Squibb

Nonproprietary article:

Tetrabromphenolphthalein Sodium.

W. A. PUCKNER, Secretary,

Council on Pharmacy and Chemistry, A. M. A.

A PRAYER FOR RELIEF FROM CANCER

Editor, Boston Medical and Surgical Journal:

It has occurred to me that you might be interested, on account of your readers, in the enclosed prayer for the guidance of those engaged in cancer research.

It is being distributed by St. Thomas' Church, Fifth Avenue, New York City.

Very truly yours,

F. L. HOFFMAN,

Dean of Advanced Department, Babson Institute.

O God, Who declarest Thy almighty power in showing mercy and pity to all who call upon Thee, and Who revealest to men, in each new discovery, a part of Thy truth, enable with Thy Grace, we pray Thee, the dullness of our blinded sight, and grant a new vision to all those who serve Thee in their search for the cause of Cancer and its cure. Lighten their darkness, O Lord, we beseech Thee, and mercifully direct them into Thy path of knowledge and truth. Grant them the realization that through Thee all things are possible; pour upon them the abundance of Thy inspiration, and finally lead them to the attainment of victory, that the scourge of Cancer may be ended, and that we, being freed from this burden of fear, may live continually in the love and service of Thine only Son, Our Saviour Jesus Christ. Amen.

CONNECTICUT DEPARTMENT OF HEALTH

WEEKLY MORBIDITY REPORT FOR THE WEEK ENDING DECEMBER 20, 1924

(Including all cases reported before 11 A. M., Monday, December 22, 1924)

Diphtheria		Scarlet Fever	
Fairfield County		Fairfield County	
Bridgeport	5	Bridgeport	9
Norwalk	3	Shelton	2
Stamford (T)	3	Stamford (C)	13
Stratford	1	Stratford	1
Hartford County		Westport	1
East Hartford	1	Hartford County	
Hartford	8	Avon	2
New Britain	6	Bristol	44
Litchfield County		Canton	1
Kent	1	Enfield	2
New Haven County		Hartford	8
Meriden (C)	4	New Britain	14
Wallingford (B)	1	Newington	1
Waterbury	6	Rocky Hill	1
West Haven	1	Litchfield County	
New London County		Litchfield	3
Norwich (C)	4	Thomaston	5
		Middlesex County	
State total	44	Cromwell	5
Last week	52	East Hampton	1
The following diphtheria		Middletown (C)	12
bacilli carriers were		Middletown (T)	1
reported:		New Haven County	
Hartford	7	Bethany	1
New Britain	2	Guilford	2
New Haven	3	Hamden	1
Norwalk	70	Madison	1
Stratford	1	Meriden (C)	3
Waterbury	1	Milford	2

New Haven	26	Hartford	2
Wallingford (B)	1	Manchester	3
Waterbury	4	Litchfield County	3
West Haven	1	Kent	3
New London County	2	Middlesex County	1
Bozrah	2	Portland	5
Norwich (C)	4	New Haven County	6
Norwich (T)	1	Hamden	5
Windham County	1	Meriden (C)	6
Pomfret	1	New Haven	5
Putnam (C)	1	Waterbury	1
Sterling	2	West Haven	1
Willimantic	1	New London County	3
		Groton (B)	3
State total	180	Montville	3
Last week	176	New London	3
<i>Measles</i>			
Fairfield County		State total	61
Stamford (C)	2	Last week	55
Hartford County		<i>Typhoid Fever</i>	
Bristol	1	New Haven County	2
New Haven County		New Haven	2
New Haven	11	State total	2
North Haven	1	Last week	6
Tolland County		<i>Other Communicable</i>	
Rockville	1	<i>Diseases</i>	
		Chickenpox	70
State total	16	Conjunctivitis inf.	3
Last week	12	Encephalitis epid.	3
<i>Whooping Cough</i>			
Fairfield County		German measles	39
Bridgeport	1	Influenza	27
Fairfield	1	Mumps	27
Greenwich	3	Pneumonia (lobar)	22
Norwalk	1	Poliomyelitis	1
Stamford (C)	1	Septic sore throat	5
Stamford (T)	10	Tuberculosis (pul.)	19
Stratford	1	" (other forms)	3
Hartford County		Gonorrhea	20
Enfield	7	Syphilis	37

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

DISEASES REPORTED FOR THE WEEK ENDING

JANUARY 3, 1925

Diseases	No. of Cases	Diseases	No. of Cases
Anthrax	2	Ophthalmia neonato-	
Chickenpox	257	rum	14
Diphtheria	148	Pneumonia, lobar	120
Dog-bite requiring		Scarlet fever	399
anti-rabic treat-		Septic sore throat	5
ment	3	Syphilis	30
Encephalitis lethar-		Suppurative conjunc-	
gica	3	tivitis	20
Epidemic cerebrospi-		Tuberculosis, pulmo-	
nal meningitis	2	nary	80
German measles	63	Tuberculosis, other	
Gonorrhea	83	forms	18
Influenza	14	Typhoid	12
Measles	192	Whooping cough	83
Mumps	77		

REPORTS AND NOTICES OF MEETINGS

NEW ENGLAND ROENTGEN RAY SOCIETY

A MEETING of the New England Roentgen Ray Society will be held at the Boston City Hospital Friday, January 16, 1925, at 8 P. M. Papers will be given by Dr. P. F. Butler and staff as follows:

1. Hernia of the Diaphragm—Dr. M. Ritvo.

2. X-Ray Treatment of Common Skin Infections: Furuncles, Boils, Carbuncles, etc.—Dr. I. Gerber. 3. The Demonstrable Causes of Shoulder Pain—Dr. J. F. Elward. 4. Intra-Thoracic Tumors—Dr. J. E. Habbe. 5. Renal Studies—Dr. P. F. Butler.

Collation will be furnished by the hospital trustees. All doctors are invited to attend.

DR. F. E. WHEATLEY, *Secretary*.

A PHYSIOLOGICAL CONFERENCE will be held Wednesday, January 21, in the Bowditch Library, Building C, of the Harvard Medical School, at 4 o'clock P. M. Dr. Hallowell Davis will speak on "Quantitative Measurements of Nerve Activity."

HEALTH UNIT, 17 BLOSSOM ST.

THE regular monthly meeting of the West End Neighborhood Conference will be held at the Health Unit, 17 Blossom Street, Friday, January 16, 1925, at 3:30 P. M. Miss Bernice Billings of the Boston Tuberculosis Association will speak on "The Work of the Boston Tuberculosis Association and the Work at the Prendergast Camp."

The splendid work of the above Association has been a tremendous aid in the campaign for the diminution of tuberculosis and every member of the Conference will hear much of benefit by coming to this meeting. Won't you make every effort to attend?

CHARLES F. WILINSKY,
Secretary, West End Neighborhood Conference.

BOSTON MEDICAL HISTORY CLUB

MONDAY, JANUARY 19TH, 1925, BOSTON, MEDICAL LIBRARY, 8:15 P. M.

PROGRAM

Dr. E. C. Streeter: The Discovery of Valves in the Veins, by Canano.

Dr. George Sartori: The Growth of Understanding vs. the Progress of Science.

HENRY R. VIETS, *Secretary*.

AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS

ANNUAL MEETING, BOSTON, MASS., JANUARY 27-30, 1925

THE attention of the medical profession is called to the annual session of the American Society of Heating and Ventilating Engineers which will be held in Boston, Tuesday, January 27th, to Friday, January 30th, inclusive, at the Copley Plaza Hotel.

While this Society is composed primarily of men dealing with the engineering problems of

heating and ventilating, its meetings will be of special interest to the forward looking members of the medical profession because many papers will be given dealing with the physiological aspect of the subject.

All physicians and members of allied professions are invited to attend these sessions.

THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, INC.

THE Eastern Section of the American Laryngological, Rhinological and Otolological Society is to hold its Annual Meeting in Boston on January 24, 1925. Through the kind offices of Dr. Allan Winter Rowe of the Evans Memorial and Prof. F. S. Dellenbaugh of the Massachusetts Institute of Technology, arrangements have been made for what promises to be a unique and most interesting session on "Sound" to which we are inviting the members of allied societies.

The program as now outlined will commence at 8:15 P. M. with a demonstration of "the electrical amplification and filtering of sound" by Dr. Harvey Fletcher of New York, the head of the research department of the Western Electric and the American Telephone Companies. The managers of Jordan Hall approving of this effort have given us the use of their splendid auditorium (floor capacity—500; balcony—400) and Dr. Fletcher and his assistants purpose wiring the hall for the demonstration which with his address will consume about an hour.

Then there will be five fifteen minute addresses by leading representatives from the scientific groups present:—the otologist, the physicist, the vocalist, the electrical engineer, and the acoustic engineer. As time affords there will then be a general discussion.

The occasion will be unique, the opportunity unusual. Members of the Suffolk District Medical Society are cordially invited to attend this meeting.

LAWRENCE MEDICAL CLUB

THE Monthly Meeting of the Club was held Monday evening, December 8, 1924, with John J. Bartley, M.D., of Lawrence, at Red Tavern, Methuen. Alfred E. Chesley, M.D., of Lawrence, was chairman for the evening.

Speaker: Dr. Francis M. Rackemann. Subject: Asthma. Upon invitation Dr. Rackemann spoke for five minutes upon the subject of "The New Medical School Dormitory." A venison supper was served after the meeting.

BOSTON MEDICAL HISTORY CLUB

MINUTES OF THE MEETING, DECEMBER 15, 1924

DR. REGINALD FITZ read a paper on "Thomas Sydenham, Our Model Practical Physician." Sydenham's life was briefly de-

scribed, his works reviewed, and a careful estimate of his position in medical history given. This paper will appear later in the BOSTON MEDICAL AND SURGICAL JOURNAL.

Dr. Fitz's paper was followed by a long discussion on Sydenham and his time. Dr. Streeter emphasized the point that Sydenham was "an example of common sense raised to the 'nth power.'" The account of Sydenham's visit to Montpellier, where Sydenham studied under Barbeyrac, was of great interest. Little is known of this teacher, although he must have had a powerful influence over his pupils. Barbeyrac deserves a closer study. Sudhoff has mentioned him in a recent paper. Dr. Streeter also pointed out that Sydenham's career was unusual in that he rose to a very high position without particular appointments. He never had a definite position in a hospital although he became the leading physician in London. Dr. Cushing said that such careers were not uncommon and that we had had a number of examples of a similar nature without teaching or hospital affiliations in this country. Osler was always interested in the village of Wynford Eagle where Sydenham was born. He often visited this village and wrote a very interesting description of it, visualizing a child coming out of the Manor House as the young Sydenham. Wynford Eagle has not changed much in three hundred years. Osler planned to write Sydenham's life for the Masters of Medicine Series, but for some reason did not do so. In Osler's house at Oxford was a panel over the mantel containing a portrait of Sydenham together with Harvey and Linnæus, a duplicate of which is in the University of Pennsylvania. Dr. Cushing pointed out the parallel between the lives of Jacob Bigelow and Sydenham. They were both interested in natural history and the self-limitation of disease.

Dr. Fitz spoke of the wide influence Sydenham exerted through his writings. There were even more editions of his works published on the Continent than in England. One hundred years after his death, Benjamin Rush collected all of Sydenham's works and had them published in America.

Mr. James Ballard then showed the various editions of Sydenham's works that are in the Boston Medical Library, and, in addition, a number of editions brought in by members of the Club. He pointed out that the Library has very few of the early editions of Sydenham. They are probably only to be found in America in the Surgeon General's Library and at the College of Physicians in Philadelphia. Sydenham wrote five important papers which were published during his life and one that was published after his death. His first collected works were published in 1666 in London and Amsterdam. In the third edition (1676) the title was changed. His famous treatise on Gout which Sudhoff considers is one of the

classics of medicine is not represented in the Boston collection. It was published in 1683. Only twenty copies of the *Processus Integri* published in 1692 were issued, none of which are known to be in existence. The first collected edition in Latin was published in 1683 in Amsterdam. In 1844 the Sydenham Society published the Greenhill edition in Latin, their first publication. Another edition, the first in English, by John Peachey, appeared in 1696. This volume of Sydenham's collected work passed through eleven editions. Perhaps the best "Life of Sydenham" is by Picard, in French. The "Life" by Payne in the Masters of Medicine Series is also good. Comrie has recently published, "Selected Works of Sydenham" (1922), with a fairly complete bibliography.

The Sydenham Society was founded in 1843 to publish the classics in Latin and English. Members were to pay twenty-one shillings a year and received all the books published. Within three months there were eight hundred and fifty members and by the end of two years twelve hundred members. The Society disbanded in 1859 due to internal dissension. In the same year a New Sydenham Society was founded by Jonathan Hutchinson. This Society lasted for forty-eight years and published one hundred forty-four volumes. When they disbanded the money left in their treasury was given to the Royal Society of Medicine to buy old books. They published some very important medical classics.

Dr. W. H. Lurie exhibited a large book of portraits of doctors containing an excellent one of Sydenham. This volume is seldom found intact, the portraits usually having been cut out.

Dr. E. H. Robey pointed out that there is an excellent account of Sydenham in the "History of Medicine" by Libby. Dr. Robey also mentioned Sydenham's characteristic of being outspoken, and thought that this might have kept him out of hospital positions. He mentioned others that had failed to advance into positions of importance because of their outspokenness. Dr. Cushing said that Dr. Weir Mitchell often stated that "no Mitchell ever had a professorial position because of their outspokenness."

Dr. E. C. Streeter pointed out the wealth of material in the notes by various authors of the books published by the New Sydenham Society. He particularly mentioned Adams who supervised the English translation of the "Epitome" by Paul of Aegina. His notes constitute an entire review of the literature and are extremely valuable.

Dr. Cushing said that many of the publications of the Sydenham Society could be bought very cheaply at the present time and they are well worthwhile acquiring. He also spoke of the excellent "Anecdota Sydenhami" by Locke, and mentioned some of the correspondence of

Sydenham in regard to famous patients of Locke's. (See Osler, "An Alabama Student, and Other Biographical Essays.")

Dr. Fitz said that Sydenham was a sufferer from gout from the age of 32 on. Dr. Joslin mentioned that gout was prevalent in Sydenham's time, especially, as someone has said, in the "delicate, tenderly brought up, who overate."

Dr. Paul Eaton showed his copy of the "Surgical Anatomy of Arteries," of Nathan Ryno Smith, said to be the second illustrated medical book published in America, and the "Works of Aristotle," 1806, published anonymously, a popular "Quack-book" of the early 19th century.

HENRY R. VIETS, Secretary.

SOCIETY MEETINGS

Easer North District Medical Society
May 6, 1925. Annual meeting at Lawrence.

Franklin District Medical Society
The meetings of the Franklin District Medical Society will be held on the second Tuesday of January, March and May.

Hampden District Medical Society
Meetings to be held on the third Tuesday of January and the third Tuesday in April.

Hampshire District Medical Society
The meetings will be held the second Wednesday of November, January, March and May.

Middlesex East District Medical Society
Wednesday, January 21. Harvard Club. Dr. Franklin K. White, "Diagnosis of Gall-Bladder Disease."
Wednesday, March 18. Harvard Club. Dr. John H. Cunningham, "Urinary Retention: Its Significance and Treatment."
Wednesday, April 15. Harvard Club.
Wednesday, May 13. Colonial Inn, North Reading.

Middlesex North District Medical Society
January 25, 1925.
April 29, 1925.

Middlesex South District Medical Society
Winter Schedule—The plans for winter meetings of the Society include the stated meetings in October and April, two hospital meetings, and five meetings to be held in conjunction with the Suffolk District Medical Society and the Boston Medical Library (two surgical, two medical, and one general).

Norfolk District Medical Society
January 27, 1925. Masonic Temple. Subject: "Some Trends of Medical Teaching and Medical Practice." Speakers: Drs. A. S. Begg and W. P. Bowers.
February 24, 1925. Masonic Temple. Subject: "The Need of Periodical Physical Examinations and How to Make Them." Speaker: Dr. Francis H. McCrudden. A second speaker will be selected to present another subject at this meeting.
March 31, 1925. Tufts College Medical School. This meeting given over to Drs. Leary and Watters for the purpose of giving us a medical examiners' talk.

Norfolk South District Medical Society
Meetings will be held the first Thursday of each month from October to May, inclusive, at 12 noon, at the Norfolk County Hospital, South Braintree.

Suffolk District Medical Society
January 23. General meeting, in association with the Boston Medical Library and the Middlesex South District Medical Society. "Some Experiences of a Medico-legal Pathologist" (lectures slides), Dr. George H. Magrath.
February 25. Surgical Section, in association with the Middlesex South District Medical Society. "Typhlophritis," Dr. Arthur H. Crosbie.
March 25. Medical Section, in association with the Middlesex South District Medical Society. "The Treatment of Pneumonia," Dr. Edwin A. Locke.
April 29. Annual meeting "Hypertension and Longevity," Dr. Harold M. Frost.

Worcester District Medical Society
February 11, 1925. Memorial Hospital, Worcester. Papers will be read by the members of the hospital staff.
March 11, 1925. St. Vincent's Hospital, Worcester. Papers will be read by the members of the hospital staff.
April 9, 1925. Subject and speaker to be announced.
May 14, 1925. Annual meeting.